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WHAT PRAGMATISM IS.

THE writer of this article has been led by much experience to believe that every physicist, and every chemist, and, in short, every master in any department of experimental science, has had his mind moulded by his life in the laboratory to a degree that is little suspected. The experimentalist himself can hardly be fully aware of it, for the reason that the men whose intellects he really knows about are much like himself in this respect. With intellects of widely different training from his own, whose education has largely been a thing learned out of books, he will never become inwardly intimate, be he on ever so familiar terms with them; for he and they are as oil and water, and though they be shaken up together, it is remarkable how quickly they will go their several mental ways, without having gained more than a faint flavor from the association. Were those other men only to take skilful soundings of the experimentalist's mind,—which is just what they are unqualified to do, for the most part,—they would soon discover that, excepting perhaps upon topics where his mind is trammelled by personal feeling or by his bringing up, his disposition is to think of everything just as everything is thought of in the laboratory, that is, as a question of experimentation. Of course, no living man possesses in their fullness all the attributes characteristic of his type: it is not the typical doctor whom you will see every day driven in buggy or coupé, nor is it the typical pedagogue that will be met with in the first school-room you enter. But when you have found, or ideally constructed upon a basis of observation, the typ-

ical experimentalist, you will find that whatever assertion you may make to him, he will either understand as meaning that if a given prescription for an experiment ever can be and ever is carried out in act, an experience of a given description will result, or else he will see no sense at all in what you say. If you talk to him as Mr. Balfour talked not long ago to the British Association, saying that "the physicist seeks for something deeper than the laws connecting possible objects of experience," that "his object is a physical reality" unrevealed in experiments, and that the existence of such non-experiential reality "is the unalterable faith of science," to all such ontological meaning you will find the experimentalist mind to be color-blind. What adds to that confidence in this which the writer owes to his conversations with experimentalists is that he himself may almost be said to have inhabited a laboratory from the age of six until long past maturity; and having all his life associated mostly with experimentalists, it has always been with a confident sense of understanding them and of being understood by them.

That laboratory life did not prevent the writer (who here and in what follows simply exemplifies the experimentalist type) from becoming interested in methods of thinking; and when he came to read metaphysics, although much of it seemed to him loosely reasoned and determined by accidental prepossessions, yet in the writings of some philosophers, especially Kant, Berkeley, and Spinoza, he sometimes came upon strains of thought that recalled the ways of thinking of the laboratory, so that he felt he might trust to them; all of which has been true of other laboratory-men.

Endeavoring, as a man of that type naturally would, to formulate what he so approved, he framed the theory that a *conception*, that is, the rational purport of a word or other expression, lies exclusively in its conceivable bearing upon the conduct of life; so that, since obviously nothing that might not result from experiment can have any direct bearing upon conduct, if one can define accurately all the conceivable experimental phenomena which the affirmation or denial of a concept could imply, one will have therein a complete definition of the concept, and *there is absolutely nothing*

more in it. For this doctrine he invented the name *pragmatism.* Some of his friends wished him to call it *practicism* or *practicalism* (perhaps on the ground that πρακτικός is better Greek than πραγματικός). But for one who had learned philosophy out of Kant, as the writer, along with nineteen out of every twenty experimentalists who have turned to philosophy, had done, and who still thought in Kantian terms most readily, *praktisch* and *pragmatisch* were as far apart as the two poles, the former belonging in a region of thought where no mind of the experimentalist type can ever make sure of solid ground under his feet, the latter expressing relation to some definite human purpose. Now quite the most striking feature of the new theory was its recognition of an inseparable connection between rational cognition and rational purpose; and that consideration it was which determined the preference for the name *pragmatism.*

* * *

Concerning the matter of philosophical nomenclature, there are a few plain considerations, which the writer has for many years longed to submit to the deliberate judgment of those few fellow-students of philosophy, who deplore the present state of that study, and who are intent upon rescuing it therefrom and bringing it to a condition like that of the natural sciences, where investigators, instead of contemning each the work of most of the others as misdirected from beginning to end, co-operate, stand upon one another's shoulders, and multiply incontestible results; where every observation is repeated, and isolated observations go for little; where every hypothesis that merits attention is subjected to severe but fair examination, and only after the predictions to which it leads have been remarkably borne out by experience is trusted at all, and even then only provisionally; where a radically false step is rarely taken, even the most faulty of those theories which gain wide credence being true in their main experiential predictions. To those students, it is submitted that no study can become scientific in the sense described, until it provides itself with a suitable technical nomenclature, whose every term has a single definite mean-

ing universally accepted among students of the subject, and whose vocables have no such sweetness or charms as might tempt loose writers to abuse them,—which is a virtue of scientific nomenclature too little appreciated. It is submitted that the experience of those sciences which have conquered the greatest difficulties of terminology, which are unquestionably the taxonomic sciences, chemistry, mineralogy, botany, zoölogy, has conclusively shown that the one only way in which the requisite unanimity and requisite ruptures with individual habits and preferences can be brought about is so to shape the canons of terminology that they shall gain the support of *moral principle* and of every man's sense of decency; and that, in particular, (under defined restrictions,) the general feeling shall be that he who introduces a new conception into philosophy is under an obligation to invent acceptable terms to express it, and that when he has done so, the duty of his fellow-students is to accept those terms, and to resent any wresting of them from their original meanings, as not only a gross discourtesy to him to whom philosophy was indebted for each conception, but also as an injury to philosophy itself; and furthermore, that once a conception has been supplied with suitable and sufficient words for its expression, no other *technical* terms denoting the same things, considered in the same relations, should be countenanced. Should this suggestion find favor, it might be deemed needful that the philosophians in congress assembled should adopt, after due deliberation, convenient canons to limit the application of the principle. Thus, just as is done in chemistry, it might be wise to assign fixed meanings to certain prefixes and suffixes. For example, it might be agreed, perhaps, that the prefix *prope-* should mark a broad and rather indefinite extension of the meaning of the term to which it was prefixed; the name of a doctrine would naturally end in *-ism*, while *-icism* might mark a more strictly defined acception of that doctrine, etc. Then again, just as in biology no account is taken of terms antedating Linnæus, so in philosophy it might be found best not to go back of the scholastic terminology. To illustrate another sort of limitation, it has probably never happened that any philosopher has attempted to give a general name to his own doc-

trine without that name's soon acquiring in common philosophical usage, a signification much broader than was originally intended. Thus, special systems go by the names Kantianism, Benthamism, Comtianism, Spencerianism, etc., while transcendentalism, utilitarianism, positivism, evolutionism, synthetic philosophy, etc. have irrevocably and very conveniently been elevated to broader governments.

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After awaiting in vain, for a good many years, some particularly opportune conjuncture of circumstances that might serve to recommend his notions of the ethics of terminology, the writer has now, at last, dragged them in over head and shoulders, on an occasion when he has no specific proposal to offer nor any feeling but satisfaction at the course usage has run without any canons or resolutions of a congress. His word "pragmatism" has gained general recognition in a generalised sense that seems to argue power of growth and vitality. The famed psychologist, James, first took it up, seeing that his "radical empiricism" substantially answered to the writer's definition of pragmatism, albeit with a certain difference in the point of view. Next, the admirably clear and brilliant thinker, Mr. Ferdinand C. S. Schiller, casting about for a more attractive name for the "anthropomorphism" of his *Riddle of the Sphinx,* lit, in that most remarkable paper of his on *Axioms as Postulates,* upon the same designation "pragmatism," which in its original sense was in generic agreement with his own doctrine, for which he has since found the more appropriate specification "humanism," while he still retains "pragmatism" in a somewhat wider sense. So far all went happily. But at present, the word begins to be met with occasionally in the literary journals, where it gets abused in the merciless way that words have to expect when they fall into literary clutches. Sometimes the manners of the British have effloresced in scolding at the word as ill-chosen, —ill-chosen, that is, to express some meaning that it was rather designed to exclude. So then, the writer, finding his bantling "pragmatism" so promoted, feels that it is time to kiss his child

good-by and relinquish it to its higher destiny; while to serve the precise purpose of expressing the original definition, he begs to announce the birth of the word "pragmaticism," which is ugly enough to be safe from kidnappers.[2]

Much as the writer has gained from the perusal of what other pragmatists have written, he still thinks there is a decisive advantage in his original conception of the doctrine. From this original form every truth that follows from any of the other forms can be deduced, while some errors can be avoided into which other pragmatists have fallen. The original view appears, too, to be a more compact and unitary conception than the others. But its capital merit, in the writer's eyes, is that it more readily connects itself with a critical proof of its truth. Quite in accord with the logical order of investigation, it usually happens that one first forms an hypothesis that seems more and more reasonable the further one examines into it, but that only a good deal later gets crowned with an adequate proof. The present writer having had the pragmatist theory under consideration for many years longer than most of its adherents, would naturally have given more attention to the proof of it. At any rate, in endeavoring to explain pragmatism, he may be excused for confining himself to that form of it that he knows best. In the present article there will be space only to explain just what this doctrine, (which, in such hands as it has now fallen into, may probably play a pretty prominent part in the philosophical discussions of the next coming years,) really consists in. Should the exposition be found to interest readers of *The Monist*, they would certainly be much more interested in a second article which would give some samples of the manifold applications of pragmaticism (assuming it to be true) to the solution of problems of different kinds. After that, readers might be prepared to take an interest in a proof

[2] To show how recent the general use of the word "pragmatism" is, the writer may mention that, to the best of his belief, he never used it in copy for the press before to-day, except by particular request, in *Baldwin's Dictionary*. Toward the end of 1890, when this part of the *Century Dictionary* appeared, he did not deem that the word had sufficient status to appear in that work. But he has used it continually in philosophical conversation since, perhaps, the mid-seventies.

that the doctrine is true,—a proof which seems to the writer to leave no reasonable doubt on the subject, and to be the one contribution of value that he has to make to philosophy. For it would essentially involve the establishment of the truth of synechism.

The bare definition of pragmaticism could convey no satisfactory comprehension of it to the most apprehensive of minds, but requires the commentary to be given below. Moreover, this definition takes no notice of one or two other doctrines without the previous acceptance (or virtual acceptance) of which pragmaticism itself would be a nullity. They are included as a part of the pragmatism of Schiller, but the present writer prefers not to mingle different propositions. The preliminary propositions had better be stated forthwith.

The difficulty in doing this is that no formal list of them has ever been made. They might all be included under the vague maxim, "Dismiss make-believes." Philosophers of very diverse stripes propose that philosophy shall take its start from one or another state of mind in which no man, least of all a beginner in philosophy, actually is. One proposes that you shall begin by doubting everything, and says that there is only one thing that you cannot doubt, as if doubting were "as easy as lying." Another proposes that we should begin by observing "the first impressions of sense," forgetting that our very percepts are the results of cognitive elaboration. But in truth, there is but one state of mind from which you can "set out," namely, the very state of mind in which you actually find yourself at the time you do "set out,"—a state in which you are laden with an immense mass of cognition already formed, of which you cannot divest yourself if you would; and who knows whether, if you could, you would not have made all knowledge impossible to yourself? Do you call it *doubting* to write down on a piece of paper that you doubt? If so, doubt has nothing to do with any serious business. But do not make believe; if pedantry has not eaten all the reality out of you, recognise, as you must, that there is much that you do not doubt, in the least. Now that which you do not at all doubt, you must and do regard as infallible, absolute truth. Here breaks in Mr. Make Believe: "What! Do you mean

to say that one is to believe what is not true, or that what a man does not doubt is *ipso facto* true?" No, but unless he can make a thing white and black at once, *he* has to regard what he does not doubt as absolutely true. Now you, *per hypothesiu*, are that man. "But you tell me there are scores of things I do not doubt. I really cannot persuade myself that there is not some one of them about which I am mistaken." You are adducing one of your make-believe facts, which, even if it were established, would only go to show that doubt has a *limen*, that is, is only called into being by a certain finite stimulus. You only puzzle yourself by talking of this metaphysical "truth" and metaphysical "falsity," that you know nothing about. All you have any dealings with are your doubts and beliefs,[1] with the course of life that forces new beliefs upon you and gives you power to doubt old beliefs. If your terms " truth" and "falsity" are taken in such senses as to be definable in terms of doubt and belief and the course of experience, (as for example they would be, if you were to define the "truth" as that to a belief in which belief would tend if it were to tend indefinitely toward absolute fixity,) well and good: in that case, you are only talking about doubt and belief. But if by truth and falsity you mean something not definable in terms of doubt and belief in any way, then you are talking of entities of whose existence you can know nothing, and which Ockham's razor would clean shave off. Your problems would be greatly simplified, if, instead of saying that you want to know the "Truth," you were simply to say that you want to attain a state of belief unassailable by doubt.

Belief is not a momentary mode of consciousness; it is a habit of mind essentially enduring for some time, and mostly (at least) unconscious; and like other habits, it is, (until it meets with some surprise that begins its dissolution,) perfectly self-satisfied. Doubt is of an altogether contrary genus. It is not a habit, but the privation of a habit. Now a privation of a habit, in order to be anything

[1] It is necessary to say that "belief" is throughout used merely as the name of the contrary to doubt, without regard to grades of certainty nor to the nature of the proposition held for true, i. e. "believed."

at all, must be a condition of erratic activity that in some way must get superseded by a habit.

Among the things which the reader, as a rational person, does not doubt, is that he not merely has habits, but also can exert a measure of self-control over his future actions; which means, however, *not* that he can impart to them any arbitrarily assignable character, but, on the contrary, that a process of self-preparation will tend to impart to action, (when the occasion for it shall arise,) one fixed character, which is indicated and perhaps roughly measured by the absence (or slightness) of the feeling of self-reproach, which subsequent reflection will induce. Now, this subsequent reflection is part of the self-preparation for action on the next occasion. Consequently, there is a tendency, as action is repeated again and again, for the action to approximate indefinitely toward the perfection of that fixed character, which would be marked by entire absence of self-reproach. The more closely this is approached, the less room for self-control there will be; and where no self-control is possible there will be no self-reproach.

These phenomena seem to be the fundamental characteristics which distinguish a rational being. Blame, in every case, appears to be a modification, often accomplished by a transference, or "projection," of the primary feeling of self-reproach. Accordingly, we never blame anybody for what had been beyond his power of previous self-control. Now, thinking is a species of conduct which is largely subject to self-control. In all their features, (which there is no room to describe here,) logical self-control is a perfect mirror of ethical self-control,—unless it be rather a species under that genus. In accordance with this, what you cannot in the least help believing is not, justly speaking, wrong belief. In other words, for you it is the absolute truth. True, it is conceivable that what you cannot help believing to-day, you might find you thoroughly disbelieve to-morrow. But then there is a certain distinction between things you "cannot" do, merely in the sense that nothing stimulates you to the great effort and endeavors that would be required, and things you cannot do because in their own nature they are insusceptible of being put into practice. In every stage of your

excogitations, there is something of which you can only say, "I cannot think otherwise," and your experientially based hypothesis is that the impossibility is of the second kind.

There is no reason why "thought," in what has just been said, should be taken in that narrow sense in which silence and darkness are favorable to thought. It should rather be understood as covering all rational life, so that an experiment shall be an operation of thought. Of course, that ultimate state of habit to which the action of self-control ultimately tends, where no room is left for further self-control, is, in the case of thought, the state of fixed belief, or perfect knowledge.

Two things here are all-important to assure oneself of and to remember. The first is that a person is not absolutely an individual. His thoughts are what he is "saying to himself," that is, is saying to that other self that is just coming into life in the flow of time. When one reasons, it is that critical self that one is trying to persuade; and all thought whatsoever is a sign, and is mostly of the nature of language. The second thing to remember is that the man's circle of society, (however widely or narrowly this phrase may be understood,) is a sort of loosely compacted person, in some respects of higher rank than the person of an individual organism. It is these two things alone that render it possible for you,—but only in the abstract, and in a Pickwickian sense,—to distinguish between absolute truth and what you do not doubt.

Let us now hasten to the exposition of pragmaticism itself. Here it will be convenient to imagine that somebody to whom the doctrine is new, but of rather preternatural perspicacity, asks questions of a pragmaticist. Everything that might give a dramatic illusion must be stripped off, so that the result will be a sort of cross between a dialogue and a catechism, but a good deal liker the latter,—something rather painfully reminiscent of *Mangnall's Historical Questions.*

Questioner: I am astounded at your definition of your pragmatism, because only last year I was assured by a person above all suspicion of warping the truth,—himself a pragmatist,—that your doctrine precisely was "that a conception is to be tested by its prac-

tical effects." You must surely, then, have entirely changed your definition very recently.

Pragmatist: If you will turn to Vols. VI and VII of the *Revue Philosophique*, or to the *Popular Science Monthly* for November 1877 and January 1878, you will be able to judge for yourself whether the interpretation you mention was not then clearly excluded. The exact wording of the English enunciation, (changing only the first person into the second,) was: "Consider what effects that might conceivably have practical bearings you conceive the object of your conception to have. Then your conception of those effects is the WHOLE of your conception of the object."

Questioner: Well, what reason have you for asserting that this is so?

Pragmatist: That is what I specially desire to tell you. But the question had better be postponed until you clearly understand what those reasons profess to prove.

Questioner: What, then, is the *raison d'être* of the doctrine? What advantage is expected from it?

Pragmatist: It will serve to show that almost every proposition of ontological metaphysics is either meaningless gibberish,—one word being defined by other words, and they by still others, without any real conception ever being reached,—or else is downright absurd; so that all such rubbish being swept away, what will remain of philosophy will be a series of problems capable of investigation by the observational methods of the true sciences,—the truth about which can be reached without those interminable misunderstandings and disputes which have made the highest of the positive sciences a mere amusement for idle intellects, a sort of chess,—idle pleasure its purpose, and reading out of a book its method. In this regard, pragmaticism is a species of prope-positivism. But what distinguishes it from other species is, first, its retention of a purified philosophy; secondly, its full acceptance of the main body of our instinctive beliefs; and thirdly, its strenuous insistence upon the truth of scholastic realism, (or a close approximation to that, well-stated by the late Dr. Francis Ellingwood Abbot in the Introduction to his *Scientific Theism*). So, instead of merely jeering at meta-

physics, like other prope-positivists, whether by long drawn-out parodies or otherwise, the pragmaticist extracts from it a precious essence, which will serve to give life and light to cosmology and physics. At the same time, the moral applications of the doctrine are positive and potent; and there are many other uses of it not easily classed. On another occasion, instances may be given to show that it really has these effects.

Questioner: I hardly need to be convinced that your doctrine would wipe out metaphysics. Is it not as obvious that it must wipe out every proposition of science and everything that bears on the conduct of life? For you say that the only meaning that, for you, any assertion bears is that a certain experiment has resulted in a certain way: Nothing else but an experiment enters into the meaning. Tell me, then, how can an experiment, in itself, reveal anything more than that something once happened to an individual object and that subsequently some other individual event occurred?

Pragmatist: That question is, indeed, to the purpose,—the purpose being to correct any misapprehensions of pragmaticism. You speak of an experiment in itself, emphasising *"in itself."* You evidently think of each experiment as isolated from every other. It has not, for example, occurred to you, one might venture to surmise, that every connected series of experiments constitutes a single collective experiment. What are the essential ingredients of an experiment? First, of course, an experimenter of flesh and blood. Secondly, a verifiable hypothesis. This is a proposition[4] relating to the universe environing the experimenter, or to some well-known part of it and affirming or denying of this only some experimental possibility or impossibility. The third indispensable ingredient is a sincere doubt in the experimenter's mind as to the truth of that

[4] The writer, like most English logicians, invariably uses the word *proposition*, not as the Germans define their equivalent, *Satz*, as the language-expression of a judgment (*Urtheil*), but as that which is related to any assertion, whether mental and self-addressed or outwardly expressed, just as any possibility is related to its actualisation. The difficulty of the, at best, difficult problem of the essential nature of a Proposition has been increased, for the Germans, by their *Urtheil*, confounding, under one designation, the mental *assertion* with the *assertible*.

hypothesis. Passing over several ingredients on which we need not dwell, the purpose, the plan, and the resolve, we come to the act of choice by which the experimenter singles out certain identifiable objcts to be operated upon. The next is the external (or quasi-external) ACT by which he modifies those objects. Next, comes the subsequent *reaction* of the world upon the experimenter in a perception; and finally, his recognition of the teaching of the experiment. While the two chief parts of the event itself are the action and the reaction, yet the unity of essence of the experiment lies in its purpose and plan, the ingredients passed over in the enumeration.

Another thing: in representing the pragmaticist as making rational meaning to consist in an experiment, (which you speak of as an event in the past,) you strikingly fail to catch his attitude of mind. Indeed, it is not in an experiment, but in *experimental phenomena,* that rational meaning is said to consist. When an experimentalist speaks of a *phenomenon,* such as "Hall's phenomenon," "Zeemann's phenomenon" and its modification, "Michelson's phenomenon," or "the chess-board phenomenon," he does not mean any particular event that did happen to somebody in the dead past, but what *surely will* happen to everybody in the living future who shall fulfil certain conditions. The phenomenon consists in the fact that when an experimentalist shall come to *act* according to a certain scheme that he has in mind, then will something else happen, and shatter the doubts of sceptics, like the celestial fire upon the altar of Elijah.

And do not overlook the fact that the pragmaticist maxim says nothing of single experiments or of single experimental phenomena, (for what is conditionally true *in futuro* can hardly be singular,) but only speaks of *general kinds* of experimental phenomena. Its adherent does not shrink from speaking of general objects as real, since whatever is true represents a real. Now the laws of nature are true.

The rational meaning of every proposition lies in the future. How so? The meaning of a proposition is itself a proposition. Indeed, it is no other than the very proposition of which it is the meaning: it is a translation of it. But of the myriads of forms into which

a proposition may be translated, what is that one which is to be called its very meaning? It is, according to the pragmaticist, that form in which the proposition becomes applicable to human conduct, not in these or those special circumstances, nor when one entertains this or that special design, but that form which is most directly applicable to self-control under every situation, and to every purpose. This is why he locates the meaning in future time; for future conduct is the only conduct that is subject to self-control. But in order that that form of the proposition which is to be taken as its meaning should be applicable to every situation and to every purpose upon which the proposition has any bearing, it must be simply the general description of all the experimental phenomena which the assertion of the proposition virtually predicts. For an experimental phenomenon is the fact asserted by the proposition that action of a certain description will have a certain kind of experimental result; and experimental results are the only results that can affect human conduct. No doubt, some unchanging idea may come to influence a man more than it had done; but only because some experience equivalent to an experiment has brought its truth home to him more intimately than before. Whenever a man acts purposively, he acts under a belief in some experimental phenomenon. Consequently, the sum of the experimental phenomena that a proposition implies makes up its entire bearing upon human conduct. Your question, then, of how a pragmaticist can attribute any meaning to any assertion other than that of a single occurrence is substantially answered.

Questioner: I see that pragmaticism is a thorough-going phenomenalism. Only why should you limit yourself to the phenomena of experimental science rather than embrace all observational science? Experiment, after all, is an uncommunicative informant. It never expiates: it only answers "yes" or "no"; or rather it usually snaps out "No!" or, at best, only utters an inarticulate grunt for the negation of its "no." The typical experimentalist is not much of an observer. It is the student of natural history to whom nature opens the treasury of her confidence, while she treats the cross-examining experimentalist with the reserve he merits. Why should

your phenomenalism sound the meagre jews-harp of experiment rather than the glorious organ of observation?

Pragmaticist: Because pragmaticism is not definable as "thorough-going phenomenalism," although the latter doctrine may be a kind of pragmatism. The *richness* of phenomena lies in their sensuous quality. Pragmaticism does not intend to define the phenomenal equivalents of words and general ideas, but, on the contrary, eliminates their sential element, and endeavors to define the rational purport, and this it finds in the purposive bearing of the word or proposition in question.

Questioner: Well, if you choose so to make Doing the Be-all and the End-all of human life, why do you not make meaning to consist simply in doing? Doing has to be done at a certain time upon a certain object. Individual objects and single events cover all reality, as everybody knows, and as a practicalist ought to be the first to insist. Yet, your meaning, as you have described it, is *general*. Thus, it is of the nature of a mere word and not a reality. You say yourself that your meaning of a proposition is only the same proposition in another dress. But a practical man's meaning is the very thing he means. What do you make to be the meaning of "George Washington"?

Pragmaticist: Forcibly put! A good half dozen of your points must certainly be admitted. It must be admitted, in the first place, that if pragmaticism really made Doing to be the Be-all and the End-all of life, that would be its death. For to say that we live for the mere sake of action, as action, regardless of the thought it carries out, would be to say that there is no such thing as rational purport. Secondly, it must be admitted that every proposition professes to be true of a certain real individual object, often the environing universe. Thirdly, it must be admitted that pragmaticism fails to furnish any translation or meaning of a proper name, or other designation of an individual object. Fourthly, the pragmaticistic meaning is undoubtedly general; and it is equally indisputable that the general is of the nature of a word or sign. Fifthly, it must be admitted that individuals alone exist; and sixthly, it may be admitted that the very meaning of a word or significant object

ought to be the very essence of reality of what it signifies. But when, those admissions having been unreservedly made, you find the pragmaticist still constrained most earnestly to deny the force of your objection, you ought to infer that there is some consideration that has escaped you. Putting the admissions together, you will perceive that the pragmaticist grants that a proper name, (although it is not customary to say that it has a *meaning*,) has a certain denotative function peculiar, in each case, to that name and its equivalents; and that he grants that every assertion contains such a denotative or pointing-out function. In its peculiar individuality, the pragmaticist excludes this from the rational purport of the assertion, although *the like* of it, being common to all assertions, and so, being general and not individual, may enter into the pragmaticistic purport. Whatever exists, *ex-sists*, that is, really acts upon other existents, so obtains a self-identity, and is definitely individual. As to the general, it will be a help to thought to notice that there are two ways of being general. A statue of a soldier on some village monument, in his overcoat and with his musket, is for each of a hundred families the image of its uncle, its sacrifice to the union. That statue, then, though it is itself single, represents any one man of whom a certain predicate may be true. It is *objectively* general. The word "soldier," whether spoken or written, is general in the same way; while the name, "George Washington," is not so. But each of these two terms remains one and the same noun, whether it be spoken or written. and whenever and wherever it be spoken or written. This noun is not an existent thing: it is a *type*, or *form*, to which objects, both those that are externally existent and those which are imagined, may *conform*, but which none of them can exactly be. This is subjective generality. The pragmaticistic purport is general in both ways.

As to reality, one finds it defined in various ways; but if that principle of terminological ethics that was proposed be accepted, the equivocal language will soon disappear. For *realis* and *realitas* are not ancient words. They were invented to be terms of philosophy in the thirteenth century, and the meaning they were intended to express is perfectly clear. That is *real* which has such and such

characters, whether anybody thinks it to have those characters or not. At any rate, that is the sense in which the pragmaticist uses the word. Now, just as conduct controlled by ethical reason tends toward fixing certain habits of conduct, the nature of which, (as to illustrate the meaning, peaceable habits and not quarrelsome habits,) does not depend upon any accidental circumstances, and *in that sense,* may be said to be *destined;* so, thought, controlled by a rational experimental logic, tends to the fixation of certain opinions, equally destined, the nature of which will be the same in the end, however the perversity of thought of whole generations may cause the postponement of the ultimate fixation. If this be so, as every man of us virtually assumes that it is, in regard to each matter the truth of which he seriously discusses, then, according to the adopted definition of "real," the state of things which will be believed in that ultimate opinion is real. But, for the most part, such opinions will be general. Consequently, *some* general objects are real. (Of course, nobody ever thought that *all* generals were real; but the scholastics used to assume that generals were real when they had hardly any, or quite no, experiential evidence to support their assumption; and their fault lay just there, and not in holding that generals could be real.) One is struck with the inexactitude of thought even of analysts of power, when they touch upon modes of being. One will meet, for example, the virtual assumption that what is relative to thought cannot be real. But why not, exactly? *Red* is relative to sight, but the fact that this or that is in that relation to vision that we call being red is not *itself* relative to sight; it is a real fact.

Not only may generals be real, but they may also be *physically efficient,* not in every metaphysical sense, but in the common-sense acception in which human purposes are physically efficient. Aside from metaphysical nonsense, no sane man doubts that if I feel the air in my study to be stuffy, that thought may cause the window to be opened. My thought, be it granted, was an individual event. But what determined it to take the particular determination it did, was in part the general fact that stuffy air is unwholesome, and in part other *Forms,* concerning which Dr. Carus has caused so many

men to reflect to advantage,—or rather, *by* which, and the general truth concerning which Dr. Carus's mind was determined to the forcible enunciation of so much truth. For truths, on the average, have a greater tendency to get believed than falsities have. Were it otherwise, considering that there are myriads of false hypotheses to account for any given phenomenon, against one sole true one (or if you will have it so, against every true one,) the first step toward genuine knowledge must have been next door to a miracle. So, then, when my window was opened, because of the truth that stuffy air is malsain, a physical effort was brought into existence by the efficiency of a general and non-existent truth. This has a droll sound because it is unfamiliar; but exact analysis is with it and not against it; and it has besides, the immense advantage of not blinding us to great facts,—such as that the ideas "justice" and "truth" are, notwithstanding the iniquity of the world, the mightiest of the forces that move it. Generality is, indeed, an indispensable ingredient of reality; for mere individual existence or actuality without any regularity whatever is a nullity. Chaos is pure nothing.

That which any true proposition asserts is *real,* in the sense of being as it is regardless of what you or I may think about it. Let this proposition be a general conditional proposition as to the future, and it is a real general such as is calculated really to influence human conduct; and such the pragmaticist holds to be the rational purport of every concept.

Accordingly, the pragmaticist does not make the *summum bonum* to consist in action, but makes it to consist in that process of evolution whereby the existent comes more and more to embody those generals which were just now said to be *destined,* which is what we strive to express in calling them *reasonable.* In its higher stages, evolution takes place more and more largely through self-control, and this gives the pragmaticist a sort of justification for making the rational purport to be general.

There is much more in elucidation of pragmaticism that might be said to advantage, were it not for the dread of fatiguing the reader. It might, for example, have been well to show clearly that the pragmaticist does not attribute any different essential mode of

being to an event in the future from that which he would attribute to a similar event in the past, but only that the practical attitude of the thinker toward the two is different. It would also have been well to show that the pragmaticist does not make Forms to be the *only* realities in the world, any more than he makes the reasonable purport of a word to be the only kind of meaning there is. These things are, however, implicitly involved in what has been said. There is only one remark concerning the pragmaticist's conception of the relation of his formula to the first principles of logic which need detain the reader.

Aristotle's definition of universal predication, which is usually designated, (like a papal bull or writ of court, from its opening words,) as the *Dictum de omni,* may be translated as follows: "We call a predication, (be it affirmative or negative,) *universal,* when, and only when, there is nothing among the existent individuals to which the subject affirmatively belongs, but to which the predicate will not likewise be referred (affirmatively or negatively, according as the universal predication is affirmative or negative)." The Greek is: *λέγομεν τὸ κατὰ παντὸς κατηγορεῖσθαι ὅταν μηδὲν ᾖ λαβεῖν τῶν τοῦ ὑποκειμένου καθ' οὗ θάτερον οὐ λεχθήσεται· καὶ τὸ κατὰ μηδενὸς ὡσαύτως.* The important words "existent individuals" have been introduced into the translation (which English idiom would not here permit to be literal); but it is plain that existent individuals were what Aristotle meant. The other departures from literalness only serve to give modern English forms of expression. Now, it is well known that propositions in formal logic go in pairs, the two of one pair being convertible into another by the interchange of the ideas of antecedent and consequent, subject and predicate, etc. The parallelism extends so far that it is often assumed to be perfect; but it is not quite so. The proper mate of this sort to the *Dictum de omni* is the following definition of affirmative predication: We call a predication *affirmative,* (be it universal or particular,) when, and only when, there is nothing among the sensational effects that belong universally to the predicate which will not be, (universally or particularly, according as the affirmative predication is universal or particular,) said to belong to the subject. Now, this is sub-

stantially the essential proposition of pragmaticism. Of course, its parallelism to the *dictum de omni* will only be admitted by a person who admits the truth of pragmaticism.

* * *

Suffer me to add one word more on this point. For if one cares at all to know what the pragmaticist theory consists in, one must understand that there is no other part of it to which the pragmaticist attaches quite as much importance as he does to the recognition in his doctrine of the utter inadequacy of action or volition or even of resolve or actual purpose, as materials out of which to construct a conditional purpose or the concept of conditional purpose. Had a purposed article concerning the principle of continuity and synthetising the ideas of the other articles of a series in the early volumes of *The Monist* ever been written, it would have appeared how, with thorough consistency, that theory involved the recognition that continuity is an indispensable element of reality, and that continuity is simply what generality becomes in the logic of relatives, and thus, like generality, and more than generality, is an affair of thought, and is the essence of thought. Yet even in its truncated condition, an extra-intelligent reader might discern that the theory of those cosmological articles made reality to consist in something more than feeling and action could supply, inasmuch as the primeval chaos, where those two elements were present, was explicitly shown to be pure nothing. Now, the motive for alluding to that theory just here is, that in this way one can put in a strong light a position which the pragmaticist holds and must hold, whether that cosmological theory be ultimately sustained or exploded, namely, that the third category,—the category of thought, representation, triadic relation, mediation, genuine thirdness, thirdness as such,—is an essential ingredient of reality, yet does not by itself constitute reality, since this category, (which in that cosmology appears as the element of habit,) can have no concrete being without action, as a separate object on which to work its government, just as action cannot exist without the immediate being of feeling on which to act. The truth is that pragmaticism is closely allied to the Hegelian absolute idealism, from which,

however, it is sundered by its vigorous denial that the third category, (which Hegel degrades to a mere stage of thinking,) suffices to make the world, or is even so much as self-sufficient. Had Hegel, instead of regarding the first two stages with his smile of contempt, held on to them as independent or distinct elements of the triune Reality, pragmaticists might have looked up to him as the great vindicator of their truth. (Of course, the external trappings of his doctrine are only here and there of much significance.) For pragmaticism belongs essentially to the triadic class of philosophical doctrines, and is much more essentially so than Hegelianism is. (Indeed, in one passage, at least, Hegel alludes to the triadic form of his exposition as to a mere fashion of dress.)

C. S. PEIRCE.

MILFORD, PA., September, 1904.

POSTSCRIPT. During the last five months, I have met with references to several objections to the above opinions, but not having been able to obtain the text of these objections, I do not think I ought to attempt to answer them. If gentlemen who attack either pragmatism in general or the variety of it which I entertain would only send me copies of what they write, more important readers they could easily find, but they could find none who would examine their arguments with a more grateful avidity for truth not yet apprehended, nor any who would be more sensible of their courtesy.

C. S. P.

Feb. 9, 1905.

THE CEPTACLE HYPOTHESIS.

The Law of Ceptacle.

Any thing is everything in an inverse ratio of the power of consciousness to separate or distinguish itself from the inseparable or indistinguishable.

THE word "Ceptacle," which is here applied to the hypothesis proposed, has been coined, out of necessity, in order to express a new idea or thought. We already have in use the word "thing," so broad and comprehensive that up to the present time it has been sufficient, with it, to refer to any existing entity as—"thing." All philosophy and all science has found this word equal to its needs. Or, to speak more properly, consciousness has had no thought broad enough to require a more all inclusive symbol for any entity. The necessity which calls for the word "Ceptacle" comes out of the fact that the books at least disclose no law or principle that will give it vitality. Whoever will give this subject their thought must have the patience needed to grope for a while in a dark land until he sees the light which the Ceptacle conception affords. For nearly twenty years has the writer been trying to open the way, some few years ago saying the same thing in print, in a very unsatisfactory way, even as he is now saying it. The effort must be to comprehend, if it be possible, this truth, that: there is a principle in nature out of which human consciousness can develop or evolve that which the word "thing" in its broadest, most comprehensive and largest possible sense cannot and does not contain. It is as if we had reached the ultimate limit in any direction of *any* "thing," as that word expresses it, and that at

this limitation of entity this principle accounting for "Ceptacle" unfolds a beyond.

This Ceptacle principle is to be found in the *peculiar nature of a ratio* existing throughout nature, where all is in a state of flux, or elasticity, and not an equilibrium, as it were, wherein nature is a relationing or proportioning of relatives which we now know as "things." The nature of this *ratio* between relatives is sufficient to account for any entity as a unit and yet for every entity as the many; sufficient to establish any difference between any entities and equally sufficient to hold in one unyielding grasp the whole as an inseparable unity. Whoever follows this "Ceptacle" thought is expected to go one step beyond any "thing" as now known, and by an unfolding consciousness of the *ratio* which any such "thing" has in its broadest relation, there to find a Ceptacle.

In this particular example given below in an endeavor to acquaint the reader with the hypothesis, its application is made to the "thing" called Matter, and the *ratio* of the *relation* existing between Matter and Mind, whereby Matter or Mind while being "things" in their common acceptance are much more where as "Ceptacles" they are being inseparably the same.

If mental or natural philosophy and this Ceptacle Hypothesis be each true, they must be found consistent at all points where their application to each other is made; but, if at any point in the application they seem not to agree, it must remain to be proven in which the error exists.

In testing the truth of this Hypothesis, the Ceptacle Principle involved should be applied to well-settled and accepted facts and not theories or speculations. Therefore the text-books on the science of natural and mental philosophy should be used, and not books arguing in support of assumed facts not yet scientifically accepted. It is not even to be assumed that all that has been accepted by science and incorporated into its text-books is unquestionably true, but that these books contain such facts as have been accepted as representing the consensus of opinion of what is true.

Our question is not what either matter or mind is or how either material or mental facts are possible; or, being possible, how

they coincide with this or that theory; but, instead, recognising that there are material things and mental things which are accepted as the foundation facts upon which natural and mental science build themselves and without which there could be no human experience, our purpose is to learn whether this Hypothesis will make such accepted facts more reasonable, and make more clear that problem of "the one and the many" which confronts philosophy.

This Hypothesis does not assert as new the principle that "things" are related to one another, or are inseparably related, but that they have that relation in inverse ratio of sameness and difference; it does make the claim that a thing itself consists of relatives and is itself a relative, and adds that the *nature of the ratio* between these relatives will explain both their Separability and Inseparability.

Science and philosophy have thus far exhaustively defined a "thing" as "any separable or distinguishable object of thought, whatever exists or is conceived to exist as a separate entity whether actual, possible or imaginary, animate or inanimate, concrete or abstract, any existence or event." The deduction assumed in this Hypothesis is that this definition only partially describes any "thing." To this accepted definition should be added this fundamental Ceptacle Principle; that a "thing" consists of relatives and is itself a relative, where in each relation there is a ratio of difference between the relatives greater than any given sameness, and a ratio of sameness greater than any given difference. So that, completing the definition according to this Hypothesis:

A Ceptacle is any separable or distinguishable object of thought; whatever exists or is conceived to exist as a separable entity, whether actual, possible or imaginary, animate or inanimate, concrete or abstract, any existence or event; having the further principle determining its nature, that it consists of relatives and is itself a relative where the ratio between the relatives is from a sameness greater than any given difference to a ratio where the difference is greater than any given sameness.

All matter is defined in its broadest sense as occupying space; while an idea or thought can not in any sense be defined as occu-

pying space. Science and philosophy both accept the position that matter and mind, as two separate entities, differ in this fundamental fact. Now, these definitions may be accepted as true as far as they go, and will answer for a partial and superficial purpose in identifying them; but according to our Hypothesis, they can not be so defined in a scientific and philosophic sense if they are to be tested in their ultimate truth. It is only a half-truth to say that matter does, and mind does not occupy space, for while this is true where the ratio of their difference is a definable or determinable one, there is a ratio concomitant with this (the other half of the truth) where they occupy the same space and where the ratio of their sameness is greater than any given difference. This seems paradoxical, but it can be explained to reason and will disclose a principle of existence applicable to all things.

What can be set up in its own identity as a thing can also be made to disclose an inhering concomitant which can also set up an identity of its own which proves to be its antithesis. The principle in the Hypothesis must be adequate to the unity of difference without its insistence upon an infinity belonging to it too great to destroy its sameness in any finite expression as any "thing."

EXAMPLE OF A CEPTACLE.

Let us illustrate with an orange:

Thus, when we observe a particular round body, of two or three inches in diameter, of a reddish yellow color, and with a peculiar unevenness of surface, and awakening certain associations of taste and smell, instead of being merely conscious of certain impressions, we perceive an orange; and in doing so we become aware of an external object, and at the same time we combine into one idea of that object the shape, and size, and color, and roughness, and taste, and smell, thinking these not as elements of thought in our mind, but as belonging to the orange.

Now this orange, as matter, occupies space and has the different elements of shape, size, roughness, color, acidity, pungency, etc.: Within the necessary distance is a human being who experiences the

sensations of seeing, feeling, smelling, and tasting in relation to the orange.

In the language of science, what can now occur is explained as follows:

We are not only capable of experiencing these sensations awakened within us by impressions from without, but we can also, through such impressions, perceive external objects.

That is, science would say that the "we" or "ego," which is mind and does not occupy space, perceives the orange, which is matter and does occupy space, and that this ego and this orange are entirely separate and different, the ego, mind, having no part in the orange matter space, and the orange matter having no possible part in the conscious "we" or "ego" that is perceiving it. That each in its last analysis, and in the principle which will account for its nature as a thing, is definable and determinable as separate from the other.

To which this Hypothesis dissents and replies: Granting, as true, for this case, and as is perfectly permissible, that the orange was, before any human being saw it or knew it to be, that it was possessed of all of its elements of shape, size, color, roughness, acidity, and odor, that these were "being," related to each other in a given order in space, occupying the whole of that orange space, in that particular manner which gave it that particular shape, size, roughness, etc., or in other words, this space held a particular degree of color, acidity, odor, etc., which made this particular orange; that it was also being in its relation to other things surrounding it; that it was having its duration in time as related to past, present, and possible future; that all this was true of this orange up to the instant that the human ego enters upon our problem; now, with the coming of this ego, what occurs? First another form of matter, consisting of the human body, enters as a factor—it is itself matter, occupying space, and in that respect only differs from the orange in the kind of matter. It possesses the added phenomenon of being in a peculiar way impressionable, of being acted upon from without. This body, "as matter," is not the "ego," which thinks and

has ideas, although it seems to be an unquestioned fact that the body is a necessity to the ideas, and thoughts, and perceptions, and that whatever the ego is, it is through and with the body that it is capable of experiencing sensation, which is awakened within the body by impressions from without the body, and that it can also, through such impressions, perceive that external object (the orange), and perceive it, not as within but as external to the body.

In the perceiving of this external object, the orange, what occurs, as nearly as science enables us to answer, is this: The body is capable of being impressed by contact with the elements of the orange through the intervening material mediums accounting for feeling, which feeling is diversified into touch, taste, sight, and smell, but so far as this contact in itself is concerned, it is but a contact of one form of matter with another. It is only as it results in experience, sensation and perception that becomes ideas and thoughts. It is true that it does result in these, but when it does so result, what does this experience, these sensations, and this perceived orange prove to be as these ideas and thoughts? The orange in its own identity, as a material thing, as it was having its being, before it was related in any way to this thinking phenomenon, was in no wise dependent upon it for its own entity. It was being its several elements of form, size, unevenness of surface, and those accounting for its color, taste, pungency in their relation to each other in the space they occupied independent of any ego. It was being an entity of single separate elements in space in the form or fact of an occupancy of that orange space. It was being this particular orange thing also as a spatial fact related to its environment. It was so existing without a human being in any relation to it at all. Upon the coming into this relation, however, of a human body and with it the phenomena, sensation, impression, perception, expression, consciousness, as ideas and thought, what has actually occurred? What has been added to creative expression? For our reply we again accept the best scientific statements upon the structure of the mind.

The human faculties are capable of experiencing sensations awakened by impressions resulting from the contact or merger of

exterior matter with that of the human body. This exterior matter, in this case the orange, being a unity of elements in the sense that they occupy a given space, but incapable in this condition as that orange apart from that human relation of being more than its separate elements in a material unity in that particular space, the phenomenon which develops with this human is the capability, the possibility of that unity consciously knowing its *unity* by consciously *being* the process or activity of unifying itself. Here the unrealised capability has actually *become*, is being by being a knowledge of the process of unity unifying its elements. Ideas which are thoughts in this process think this orange as the orange itself, external to that human body, thinking them as *in* the source that awakened the impressions. This *process* is itself now as real as that material was before this evolution. The activity which expresses itself now as the unifying consciousness of that material unity is enabled to become such by an enlarged relation of the orange, reaching out to where it includes the human phenomenon. Consciousness thereby *becomes*. What already has been as possibility before this consciousness is now become itself as this new phenomenon, which proves to be the orange itself in a larger relation which has unfolded the *real existence* of these orange elements and their unity. This real existence was a necessity to the orange before the human relation entered. Its *conscious* realisation is essential only to the human phenomenon. The consciousness of *real existence* is what has evolved. It is these experienced sensations of which the orange is an example which constitute human *being*, and this orange experienced in this particular instance is the spatial dimension and phase of that being.

The different element attributes of the orange, its color, roughness, form, size, and whatever else is needed of material elements to make it what it is, make it an orange without human consciousness being a necessity to it. It can be and is unified by the principle of being its own relatives, but when human consciousness does become a relative, it *evolves* one of these heretofore unevolved relatives into its difference through a new phenomenon. The intelligence that is attributed ordinarily to consciousness only is not

in consciousness only; it is and *was* in the orange before it was human intelligence, but then it was having both its relatives only within the orange; the ratio of difference within itself as phenomenon was not sufficient to evolve the variations. It was a unity, but without consciousness of itself within that limitation; it had no perspective, as it were, it could not within its limitations get a measure of itself or reflect upon itself. What then occurs according to science is, that every element in that orange is in an *unbroken* material contact through the other elements up to and including the brain. Sensation results, but sensation is only the unbroken contact of the elements *in* the orange which nature has found a way for projecting into their wider relation, where their succession or order in space and duration in time as they are in the orange, is having this wider relationing. This new relation evolves the inhering difference; because the new phenomenon of sensation, thought, mind, whichever it may be called, does not act in the same ratio in this evolved phase that is the ratio between the relatives when limited to the orange only. With the human brain in the limitation the ratio between these elements can be separated as a succession through these succeeding impressions of which the brain is capable. The succession through these new phenomena proves to be a process, for it is the difference of that inert or sameness in the orange, but it is the process of the orange, and because it is occurring where the orange is now being also its exterior relative, it is therefore where the ratio is a *given* difference, and in which this other relative, as that difference, can also set up an identity. In this particular relation we call that identity consciousness. If we call one matter, the other in this particular difference can not be matter, and we call it mind; or, in language, we classify one as noun, really because it evolved only substance in its limited ratio of sameness; the other as verb, because we can predicate process or change out of the ratio from one to the other. A wheel at its center is apparently at rest, at another part is an apparent solid. It is the same wheel in the same motion, where within a given range and where the spokes and space are seen, it is neither at rest nor a solid. The explanation, as we know, is a matter of

ratio accounting for a sameness and difference in one fact, and yet science can truthfully rest itself upon the principle that a solid must be to science what the wheel is in its apparent solidity, and that rest is what rest is at its center when in either the ratio is beyond its given. Nevertheless, any such solid has space and any such rest has motion.

What we are endeavoring to demonstrate in this application of the Hypothesis is, that the most common material thing cannot be limited and described as its own entity only, notwithstanding such a description has been satisfactory to science and philosophy. Knowledge has already progressed sufficiently to add to such material description elements inseparable to it while being its difference. This Hypothesis recognises the apparent paradox. It makes no attempt, either in this induction or others to follow, to eliminate the paradox; on the other hand, it is because it is seen to exist in all things that the purpose is to find the principle, if there be one, underlying all things which will explain this paradox and make it consistent in human reason, and to do this the line which it is following is this: The present universally accepted method of determining or defining any "thing" in its own identity or integrity is to confine such thing to quality or qualities, quantity or quantities, relation or relations, mode or modes which are in time and space identical or measurably so: That the elements which make up the thing are virtually alike to the extent at least that a different element does not enter into that identity or the integrity of such thing. Now to this universal method this Hypothesis takes no exception save that while these elements of sameness thus used to define such things are there, it is equally true, whether paradoxical or inconsistent with accepted methods, that already conscious knowledge has advanced in its development to where no exhaustive definition or determination of a "thing" can be given without the recognised presence of a quality, or quantity, or relation, or modality which can not be likened to these other elements and can neither be eliminated from nor confined to that same space and time, yet are an inseparable part of the identity and integrity of such "thing," and without which it cannot exist. The paradoxical, the apparently in-

consistent conditions which nature has always thrust upon reason, the antithesis of things, has been a problem from the beginning to both science and philosophy. The method of meeting the difficulty has not been to accept what has been so evident as a part of nature and readjust our reasoning, but instead to retain our system of logic, to insist, for instance, upon no new adjustment of the point of view of ego as to itself, and attempt either to eliminate the paradox or ignore the antithesis or to call the unexplainable a negligible quantity. This Hypothesis seeks to find a place for the so-called paradox, for this antithesis, this negligible, although to do so it assumes that reason must readjust itself and logic find new rules by which to assert itself. Because matter and mind as related to each other have been at the very foundation of the difficulties, the battle-ground of controversy, our demonstration of the Hypothesis begins with the application of material things where they have appeared fundamentally inconsistent in their relations to mind.

We began with matter occupying space—this as related to the orange elements of shape, size, roughness, etc., environed by other matter. Through the medium of this other matter, now usually considered to be the atmosphere, its radiation and vibrations, or else by direct contact, impression was made upon, through or in another form of matter called the human body, whereby was evolved or developed an entirely new phenomenon—conscious self—the power of combining as that self all of those separate elements in space into a unified entity. Not as something new in themselves, but a larger relation of something already existing, evolving the *power* of *self*-realisation. This is ego, but here it only adds knowledge to existence. In this particular relation it is mind, and while this mind is not matter in any of the forms given to matter and will not permit of a scientific classification as matter, yet when it appears it is as an inseparable relative; where in their *sameness* is needed the very same space for an exhaustive analysis of either. For the same identical space by which the orange is determined and defined is necessary to what proves to be mind, and in this relation in their sameness the ratio between them in that sameness of space is greater than any given difference. The Hypothesis being tested

does not take the position that the statement is erroneous which defines matter as occupying space, that is, as those elements that coexist in space, but that this is but the definition of the unity of this matter as one of its relatives and that no exhaustive definition can be given, after the human enters, which does not include the unifying as the other relative. That when this relative is included it will prove to be a sameness wherein the ratio is greater than any given difference, which sameness we are endeavoring to demonstrate where mind is the relative of the orange. This demonstration is, however, but a part of the principle disclosed in the Hypothesis where it further asserts that in this same relation of matter and mind in this same space these relatives, matter and mind, are in a ratio of difference which is greater than any given sameness. This orange, called matter, consists of elements occupying space in measurable quantity, but it is the unifying of these elements and not the elements in their unity which is the orange, and this unifying element is not the matter accounting for the orange. This unifying element will unify any other thing, as well, of entirely different elements, and yet this unity consists of these two differing relations, while in this relation their ratio of sameness is greater than any given difference for the reason that neither one in this relation can be eliminated in their occupancy of the same space, nor can either be described in this orange without the other in any exhaustive description. That the unifying element in the course of evolution becomes mind is only a step forward in creative expression; the principle is the same as a basic fact related to the orange thing itself, without the mental evolution.

We began the application of the Hypothesis in this particular instance to this statement, "All matter is defined in its broadest sense as occupying space, while an idea or thought cannot in any sense be defined as occupying space." What has been shown by the Hypothesis is that the "thinking principle," contrary to accepted belief, may be extended and in its true state as a related instead of an unrelated principle can be and is known where it is being its form and location. It has space relations, contrary to prevalent assumptions.

This orange, consisting of matter, occupies space.

These ideas and thoughts prove to be a unifying of this same matter in this same space.

In this spatial relation, matter and thought are inseparable relatives, having a ratio of sameness between them greater than any given difference.

A definition or description of either matter or thought confined to one of these relatives is not a complete definition and is not in accord with the scientific or philosophical knowledge of the day; and to so confine it is inconsistent with such knowledge.

PROP. I. Matter and mind in an inseparable sameness occupy the same space.

SECOND APPLICATION.

Matter and mind, which in an inseparable sameness occupy the same space (PROP. I), as related to that space have a ratio of difference between them greater than any given sameness.

Matter and mind are both extended and may be so related (PROP. I)that either is determinable by the same space, and while in that relation neither can be defined or determined except by that particular spatial fact. Yet the paradox must be true, according to the Hypothesis here set up, that related to this same space and sameness, there is a difference between this same matter and thought where the ratio of that difference is greater than any given sameness.

Now, any given matter elements in a given space, being unified by or through related thought (PROP. I), must have that particular relation as one existing fact in a given present time as related to any past or any possible future. That "given present" is the duration of that particular relation in that given space, yet within this "given," change is taking place according to scientific assumption, for science is agreed that there is no such thing as the absolutely constant in matter. "All things are growing or decaying, accumulating matter or wearing away, integrating or disintegrating." The Hypothesis asserts that there must be a paradoxical or apparently inconsistent principle involved in what will account

for the existence of the orange; where two relatives, which can be identified separately as matter and thought, nevertheless merge the elements of one with the unifying process of the other so that their merging is to a sameness where the ratio of that sameness is greater than any given difference. Nevertheless the principle in the Hypothesis requires that the same two relatives in that same space shall have a ratio of difference greater than any given sameness. Through PROP. I, the condition is shown to prevail asserted in the first phase of the principle; it is the unity of variety in the unifying of a variety of elements, but it is existing in a given space (as the orange). It *is* that orange, it is the one dimension, as it were, in time, a present orange, which is the unified of those particular matter elements, but as we have learned from science there is no such thing as the constant in matter, then that matter relative cannot exist longer than it is *being* that "given" present in that particular specific relation, while the other or thought relative in this same particular relation is constant in that it unifies the succession of this *being* with what *becomes* as a result of change. It is the other phase of the principle. It becomes, as it were, a second dimension, in time. To this thought relative, but not to the matter relative, it *is* the orange, as well as it *was* the orange. Therein lies the fact that between inconstant matter and related enduring thought there is the ratio of difference greater than any given sameness, and yet the same unifying thought can no more be separated from either the past or the present relations than can the same matter be present in the change. If what are treated as facts in this application are true as set out in PROP. I, as well as in PROP. II, the Hypothesis undertakes to account for those facts upon the principle that the material fact can only exist as matter when merged with that which can nevertheless be defined or determined as another entity, and where that merger is in a degree of ratio between these two greater than any difference, and further that, once this merger is established, there will be found in one of those relatives a difference where the ratio of *that* difference between them is greater than any given sameness. That is, there appears to be a reasonable explanation for the paradox of a sameness which will

produce variety, which in this second application gives us the variety or difference existing in the first application and enables us to state:

PROP. II. Matter and mind have a ratio of difference between them, as related to the same space, greater than any given sameness.

We find such statements constantly confronting us as the following (James's *Psychology*):

"According to the assumptions of this book, thoughts accompany the brain's workings, and thoughts are cognitive of realities. The whole relation is one which we can only write down empirically, confessing that no glimmer of explanation of it is yet in sight. That brains should give rise to a knowing consciousness at all, this is the one mystery which returns, no matter of what sort the consciousness and of what sort the knowledge may be."

As heretofore stated, in developing this Hypothesis, both material and mental "things" will be assumed as existing facts, as science and philosophy have found and classified them for their purposes; as, for instance, it accepts:

"Matter as that which occupies space or is extended, and with which we become acquainted by means of our bodily senses or organs," and that "mind is self-conscious intelligence, possessing rational power of self-determination; or more widely—specially from a physiological point of view—to include such recognition of external objects as is provided for through the special senses as related to the cerebrum."

If, therefore, the mystery to be explained, as pointed out by Professor James, is how brains as matter are possible, or how a knowing consciousness as mind can be an actuality at all, then so far as this hypothesis goes it must remain a mystery, but if these actualities are accepted as unquestioned existing phenomena, definable as indicated, then the hypothesis is intended and expected to point out a law of cause and effect which will explain how "brains should give rise to a knowing consciousness."

In Proposition I there were certain several matter elements such as color, form, etc., which, as matter either separately or together, can best be defined or determined when they are simply

asserted to be extended or occupying space. In the further development of Proposition I it was stated that these several matter elements were *unified*.

We have here two distinctly differing things, the one definable as material substance, that is extended and occupying space, the other an activity, a process, the existing or being of the first as a unifying, being, or process of that extension. The Hypothesis holds that it is because it is a difference between these two, that because there is an opportunity or stress present in any "thing," that such thing, in its own identity, with such inhering stress between sameness and difference, constitutes a cause which must of necessity produce as effect that which is an identifiable difference. Therefore, in this instance or relation matter gives rise to consciousness. What accounts for this is a *never-ceasing* relationing of relatives in a ratio which discloses a concomitant integration and disintegration of identity,—a never-ceasing interchange of what in the Hypothesis is called sameness and difference. It must not be assumed that in any given induction possible to be made these changing identities can all be followed any more than it is possible for all nature to be known. But it should be assumed according to the Hypothesis that every identity will have an inhering difference beyond any possible given ratio of sameness sufficient to be cause for the effect indicated.

In the Hypothesis what is called a sameness between the relatives does not mean that a difference does not exist in that relation, but no *given* difference exists, none can be determined or defined. It is where in nature the ratio between the relatives has not yet been pushed back upon itself, from out of which any difference must come. An analogous case in principle where consciousness is a factor is where a base can not be had large enough in a triangle by which, with the present mechanism for measurement of the angles, there can be found but parallel lines on the two sides pointing to some fixed star. The principle of sameness and difference, it must be understood, is within *any* thing; as, for instance, an assumed indivisible atom. This atom must by this very principle itself consist of relatives, though, as in the case of any such ulti-

mate in consciousness, it only appears to that consciousness in its aspect of sameness and not that of its difference, because, again, as the Hypothesis would hold, the ratio in such "thing" between the relatives is yet where the sameness is greater than any given difference, and not yet where any nature phenomenon has evolved a vantage by which to disclose the ratio of difference which nevertheless does exist. For here we should again note, which we can not too often repeat, that the principle upon which this Hypothesis proceeds is that *every* thing consists of relatives and is itself a relative, and that the ratio in any relation is *from* sameness *to* a difference with a concomitant relationing of difference to sameness, where the *given* is the definable or determinable limitation at either extreme, and that this "given" is itself a thing like the rest, subject to the same principle. If within one relative that principle will permit its being a thing which can set up its own identity and prove itself to consist of relatives, then it would seem as if the principle would be sufficient to establish a method whereby with that other identified relative the unity of difference and the difference in unity throughout nature would become reasonable. It will be seen, however, that to do this requires, what this Hypothesis assumes must follow, that human understanding should no longer define any "thing" in its last analysis except as a relative where its known or unknown difference is a part of any complete definition or determination.

In the illustration cited, the wheel taken as its whole might be said to be involved in a movement upon its own sameness and difference where this fact discloses a principle in such movement which becomes a cause accounting for two apparently opposite or contradictory effects, for in one relation the effect is what science classifies as a solid occupying all the space at a given center, while in the other relation it is motion; that is, it is in fact the same principle as duration or succession in time. Now, the application of the Hypothesis to Professor James's difficulty of "knowing consciousness," as, for instance, a knowing consciousness of the orange, would be in some such manner as this: The elements in the orange as related to themselves when the orange is being its own relatives,

are to each other being in one and the same instant, with no *given* difference in a related duration in time, but when this sameness becomes a relative in its evolved and larger phenomena, then in their impress upon the brain the succession of that impression becomes a given difference and no longer a given sameness.

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THE PLACE OF THE CODE OF HAMMURABI.

TO the present day, the studies of the famous code of Hammurabi have been made solely from the Semitic standpoint. One group of scholars has sought to find support for the contention that Hebrew civilisation was dependent upon the Babylonian from the very beginning; that it is in fact, but a certain logical development therefrom. The effort is conspicuous for its failure. An opposing school, influenced by traditional views of Hebrew history, strongly resents the suggestion that the Hebrew code should be for one moment considered or spoken of as upon so low a moral plane as the Babylonian. But such protest is even more futile than the above theory. No worthy end is attained, no useful purpose subserved, by insisting upon the unapproached superiority of the Hebrew and his code in their earlier years. The Hebrew records themselves do not make the claim, nor afford material for its support. The great Hebrew teachers assert that their people had received a peculiar training, which began when they were intellectually, morally, and socially in a very primitive condition. The final products of this historic training remain just what they ever have been, no matter what view be taken as to the origin of the people and the methods used in their instruction. The evidence is becoming preponderant, moreover, to indicate that the Hebrew organisation in its final shape owed much to Babylonia, if indeed it did not closely copy the ritual and religious organisation of the great Eastern center of law and religion. The value of Biblical teaching is in no wise assailed or impaired, even if such a possibility resolve itself into a fact.

We have a third theory, of which D. H. Müller, of Vienna,

may be considered the spokesman. It is frankly recognised that the differences between the codes of Palestine and Babylonia are more prominent than the resemblances: and it is suggested that we have before us sister-codes, so to speak: each being a regular development of certain principles of primitive Semitic social life. It is then maintained that we are in a position to determine what were the few elementary principles of primitive Semitic social and religious law.

But this view has the objection that the very elements that we might expect to be common to both codes, in case of such descent, are those which are notably missing from the Hebrew law, and constitute its supreme defects. We might expect minute and carefully detailed regulations concerning commerce and trade, rental, agriculture, etc., to be lost during any relapse to nomadic life, such as we find recorded in the case of the Hebrew. But why should the highly developed code of individual rights, of feminine independence, of equitable inheritance, of judicial organisation and procedure, be utterly lost by a people who had once been in southern Babylonia? May it not be that the Hebrew civil and secular code is simply Palestinian? that it is in its main features as Canaanitish as their language? The principles which the theory of common descent from an earlier code would give us reason to expect in the Hebrew code we do not find expressed in it. They had to be learned later, in some measure, from Babylonia. We must account these facts fatal to the theory.

It has long been suspected by students of anthropology that Semitic scholarship has allowed itself to be too much affected by the conception of the peculiar separateness of the Semitic race. The acknowledged presence and influence of animistic and totemistic elements in its religious development have served in some measure to obliterate the distinction, and to link the Semite religiously to the rest of mankind. Can any other position be safely assumed in the study of Semitic law? It is time to take another leaf out of Bastian. Does what is known as Semiticism represent an independent type of human development, something pre-eminently *sui generis*? Or is it only one of the necessary stages in human evolution, affected

by the peculiar local conditions in Arabia? Are we to find in the Semitic codes compared Ur-Semitic ideas, with Müller, or pre-Semitic ideas—principles latent in humanity and common to the race? Does the final highly developed code of Babylonia represent anything else than a certain stage of human progress?

There are those who are peculiarly restive under the suggestion that the evolution of man is so largely controlled by material factors as Buckle's view indicates. Ingersoll's dashing statement that "man is a machine into which we put what we call food, and get therefrom what we call thought" is sometimes selected as an expression of the principle, and assailed as hopelessly atheistic or materialistic. But is it? Without discussing the soundness of the statement, are we not still compelled to ask who made the machine, its food, and the environment and laws of its operation?

We may inquire then if the evidence of so-called Semitic law does not compel us to a monistic view of mankind, as the necessary correlate to a monistic conception of God. The influence of local environment does not conflict with the view, but supports it. And such monistic view of mankind the Hebrew literature asks us to accept. We may then compare the principles of the Hammurabi code with those of other bodies of legislation, to determine whether we should not explain it simply as a high development of man, embodying elements common to the race, and attaining a point possible only after long ages of social evolution.

One fundamental principle of all primitive law is retaliation. We cannot perceive any essential difference in this respect between the laws of the Semite and those of the Aryan, the central African, or the North American Indian. There is a mere impulse of the human animal to strike back when struck; the disposition to cherish the memory of an injury, and to avenge it at the first opportunity. There are no necessarily moral ideas in such behavior, nor can we fairly say there is a law in it, in the sense which we are considering.

The idea of law seems to begin in the establishment of a rude notion of proportion between an injury and the vengeance repaid. What we know of humanity does not suggest that this results from any reflection upon the abstract idea of justice. Primitive ven-

geance is noted for being entirely disproportionate to the original offense: and it remains so till a tolerably definite social order has become established. When necessity has extended the crude family idea to a body of men forming a clan, the impulse of the avenger is seriously hampered. He is compelled to consider what may be the result if he takes the whole matter into his own hands. Thus a rigidly applied *lex talionis* develops as a pure compromise between two opposing factions. The savage man would fain torture his enemy to death for a comparatively trivial injury. But the friends of this aggressor would have him go scot-free, if possible. The result of the contention is eventually to establish the law that the aggressor shall be treated just as his victim was. The one faction will allow no more, the opposing clan will accept no less. Thus a consuetudinary law becomes established with no necessary moral associations or impulses, with no other notion of justice than a rude sense of proportion between the two injuries inflicted. The abstract conception of justice, the purpose to work to some high end, must be regarded as a far off consequent, rather than as a cause, of the *lex talionis.*

How difficult it is to get beyond this stage and to reach abstract treatment, how very lame all effort to administer such a codal principle necessarily must be, is well illustrated by the story of the man who was haled into a Turkish court upon a charge of murder. He had fallen from an upper window upon a passer-by; thereby the latter was killed, though the former escaped unharmed. The dead man's son, as next of kin, took up the case: the court gave verdict in his favor. The son was to go to the same upper window: the accused was to stand beneath, and the son was to fall upon him and kill him. An American court might render such verdict as a bit of sarcasm upon a senseless suit. But there is no grim humor intended in the Oriental verdict.

The tale illustrates one point in the arrest of development of Oriental law, as contrasted with the more modern Aryan laws. A second difficulty in the application of such principle appears when the literal application of the *lex talionis* directly involves other parties in addition to the original plaintiff and defendant. In the code

of Hammurabi some trace of this difficulty remains, as in the case of the builder who erects a flimsy structure. Should its collapse occasion the death of son or daughter of the householder, the son or daughter of the builder must be put to death. But this stage is much beyond that of the early Hebrew, or of modern China, where the man is not viewed as an unrelated individual, but merely as the representative of a clan or family: and any grave misdeed of one may involve the destruction of the whole, as in the case of Achan. Or, the sons may be slain long after the father's death, to avenge an old grudge against the father, as in the case of Saul's sons. So in China to-day supposed treason involves the destruction of all male kin within the first degree: and in West Africa a man having a grudge against some member of a neighboring tribe kills the first member of that tribe whom he may meet: thus satisfying the grudge. It is the tribe, not the individual, that has wronged him. The correlate of this view is that the clan acknowledges the deed of a member as its own, and the effort to protect the wrongdoer may involve the destruction of the clan, as in the case of Gibeah of Benjamin, and of Jabesh-Gilead. But this stage is wholly past in the code of Hammurabi: clans have given way to the individuals, and the single law referred to is the only apparent trace remaining of overstepping the conception of purely individual responsibility for any given act. It is worth remembering, in this connection, that Ezekiel, the exile in Babylon, preaches to Israel the recent Deuteronomic law that no son should be punished for his father's misdeeds: "Ye shall no more use this proverb in Israel." "The soul that sinneth, it shall die," was the law of Babylon.

It may be recognised that the abandonment of such primitive principle was essential to the empire-building of the ancient Babylonians. We know that in the lower Euphrates valley cities sprang up ages before the ascendency of Babylon: their relations to each other being much like those of the free cities of mediæval Germany, or the city-republics of Italy. Only a common body of law, something of a compromise, embodying some principles acceptable to each clan city, could fuse the group of individual competitors for the hegemony into a harmonious whole. The compilation of such

was the achievement of Hammurabi: and it is very clear that such consolidation was hardly possible till the idea of clan responsibility was practically abandoned for that of personal responsibility.

The code of Hammurabi has again passed beyond the Hebrew law, or indeed any other Semitic law, in modifying the *lex talionis* by recognition of the right of self-defense. The Hebrew code, even its latest form, recognises only accidental killing as constituting a ground for modification of the law; and the method is not one that would commend itself to Christian courts. It is to be noted, also, that murder is not dealt with by state courts: there is no state concerned in the matter. The whole thing is left really to private vengeance: and the man who in an altercation kills another in self-defense has no protection. The story of Abner, Joab, and Asahel serves to illustrate the matter. David has been criticised as weak in his dealing with Joab. This is beside the mark. David had no jurisdiction in the matter. A further step in the modification of the rigid law of retaliation may result from large commercial development, and the necessity of regarding a slave as a piece of property, upon which a pecuniary value is placed. Late Babylonian decisions may show the influence of this, and suggest a new meaning for "a life for a life." We have a case in which a man had been killed: whether accidentally or no, we cannot say, as the tablet is damaged. But the judges decide that he must make over to the family of his victim a certain valuable slave: otherwise he must be put to death on the grave of the slain. The great prominence given to the commercial value of a man in Babylon, with the everywhere apparent effort to make amends to all injured parties, suggest that we have not here a mere case of compounding a felony, but the effort to make amends to a family for the loss of a breadwinner by giving it another. In this point the Babylonian practice may have somewhat the advantage of modern codes, in that it endeavored to make amends at the only point where such was possible.

Yet this may have been the survival of a very ancient, and slightly different practice. Among the wild Arab tribes of the lower Euphrates protracted inter-clan feuds are to-day finally ad-

justed, after counting up the losses, by the payment, to the worsted clan, of two women for each man that it has lost above the number killed in the rival clan. A man is accounted more valuable than a woman, for the warlike purposes of peoples: further, the defeated clan needs more child-bearers, to repair its numerical losses. Very similar methods of settling clan feuds are reported from West Africa. The view taken of woman in tribal wars may recall to the reader the savage destruction of women in the earlier narratives of the Old Testament. And it is interesting to recall that Bellamy, in his *Looking Backward,* advocated the adjustment of all fluctuations in the working-strength of a nation, if produced by emigration, by reimbursing such nation for the loss of each efficient laborer. He may have been looking backward more really than he knew. Such early practice is one important root of slavery. The persons thus paid over generally become servants of the clan. But it is, on the other hand, proper to inquire if modern law, dealing only with moral and retributive aspects of murder cases, has not wholly omitted to consider the inevitable economic or commercial interests involved. The earlier law, whether Semitic or Aryan, seems to have tried to grapple with both.

The very large development of commercial law in Babylonia, and its influence in humanising the *lex talionis,* are indirectly supported by the prominence given to adoption. It became much more than a means of securing an heir for a childless family. It was an effective method of recruiting the powerful labor guilds that were so prominent a feature of the Babylonian social structure. Adoption was void if the child were not taught his adoptive father's trade. A commercial estimate of a man's value does not appear as modifying the *lex talionis* in murder cases, where men of different ranks were concerned; at least it does not appear in the code.

Now this question of rank is one of the largest factors in detroying the rude equity of the law of retaliation. The noble cannot meet the serf upon equal terms. An injury to one cannot be considered the equivalent of an injury to the other. Yet it need not always displace the method of compounding petty injuries, that has developed among men of equal rank. We observe this, in the case

of such, in the code of Hammurabi. The basis of estimation seems to be the cash value of the services of a first-class slave. From this standpoint the relative values of hand, foot, or eye, approximate those adopted by modern accident insurance companies. But in the case of slaves, only those salable or transferable are viewed as chattels. The man whose service is merely temporary, in order to cancel a debt, is legally a free man, and an injury to him must be treated from that standpoint.

The two principles of recognition of rank and of commercial compounding are naturally susceptible of great abuse. The former has produced the larger injustice in Aryan law and practice, owing to the more minute social subdivision. The commoner or burgher is above the serf or bondman; neither is held of any value in comparison with the knight or nobleman. In India the Brahmin eventually assumes the same unapproachable pre-eminence. The fearful oppression of the lower ranks, under such conditions, is a familiar tale. But Semitic society has not attained these sharply defined delimitations. Even the slave of to-day may be the prince of to-morrow. The one is not so inferior socially, the other not so pre-eminent, as in Aryan society. So in Babylonia industrial and intellectual efficiency seem to be recognised, whether in freeman or slave. We do not find the minutely graded officialdom so prominent in military Assyria. The institutions seem to be moulded in no small degree by the earlier Sumerian precedents. The judicial organisation rather suggests the Chinese civil service than the methods of other Semitic peoples. The powerful guilds, their apparent importance in the social structure, remind us of the guilds that arose similarly among the free Teutonic burghers of mediæval Europe, or the guilds and societies so important among modern Mongolian peoples. But legally there seem to be but two great classes in Babylonia, as in Central Africa: the chiefs or officials, and the freemen. A law is promulgated for the punishment of the man who injures one of higher rank than himself: the penalty is a public whipping. There is but one law, one penalty, one comparison of rank involved. While this elementary difference in rank works abuses in Semitic lands, it does not seem to have been re-

duced to a regular "Wehrgeld" scale, as among ancient Teutons and Hindus, according to which "every man has his price," at which he may be injured. On the other hand, the compounding idea has been the more abused among Semites and Africans: greed for petty gain overruling other considerations. A woman appealed to King Theodore of Abyssinia; her husband had been murdered; the offending soldier had escaped with a small fine. King Theodore summoned the judge and the soldier, heard the evidence, then asked the judge what penalty had been imposed. "Ten dollars fine," replied the judge. "Very cheap!" said Theodore: "I can afford that!" and drawing a pistol he shot the soldier dead, then laid down the ten dollars before the astonished judge, whose subsequent judicial conduct was more circumspect.

We have also applications of the *talio* to property questions. Two children are playing on the floor. One breaks the toy of the other and is promptly struck; or his toy may be broken; or if the injured child have a little more foresight, he will appropriate his playmate's toy to make good his loss. Practically the world has no other principles in all its laws, for the protection of property. Among children the compensation idea is usually the last to manifest itself, while the mere angry destruction of the other party's property is generally recognised as peculiarly childish; or, among men, as peculiarly savage. In law this method has never become recognised as a wise principle; and there is no legislation that punishes a man by burning his crops or maiming his beasts. Only where the property itself is a nuisance or source of peril does law generally demand its destruction, as in the case of a savage dog or unruly ox. The two largely used principles then are punishment inflicted upon the person of the offender, and the exaction of damages from him. In Aryan law the former principle is the more largely applied, though the very modern Aryan peoples do not now kill, burn, maim, or mutilate petty offenders against property rights so generally as they once did. In the Hammurabi code, on the other hand, restitution is the great principle almost everywhere applied. All sorts of failures to fulfill contracts, all sorts of petty thefts or attempts at fraud, seem regarded as creating petty debts, which stand against

the offender. The primal purpose seems always to restore to the injured property-owner all that he had been deprived of, with some compensation for his annoyance. Beyond this the code does not seem to go. There is no conception of a wrong to the dignity and peace of the state, of which we hear in our own formal indictments, In a single case we find maiming—that of the penniless fellow who is dependent upon the *kêpu* for the opportunity to raise a crop. If he steal any of the equipment entrusted him, he has no means of repayment, and personal injury is resorted to: he has his fingers cut off. The death penalty that appears in the early sections of the code in a case of disputed property, we must consider as really aimed at the perjury, not at the theft. The offense has been greatly aggravated: the false claim persisted in, and sworn to. The offender has violated the sanctity of the temple as much as he who has broken into it and robbed the gods. Each offender meets the same fate.

As in the case of the earlier *lex talio* for personal injuries, we cannot affirm that there are any necessary moral ideas in the conduct or impulses of the children used above for purposes of illustration. And the idea of restitution must be reached only after much discussion of the problem in clan life. It is not everywhere dominant in savage law: rather does it seem exceptional. In African law it is notably rare: mutilation, slavery, or death are the usual penalties. In the Hammurabi code, however, the religious feeling in regard to restitution is very strong. All losses or injuries must be attested by oath; and the gods are in this way given great prominence as the protectors of property.

The moral ideas of the people are much more definitely discernible in another direction. It is apparent to every one that a people who begin to regulate society by the application of a rigid *lex talionis* or restitution-principle will in time discover that the method has most pronounced limitations: that there are many of the most serious offenses to which the principle is totally inapplicable. That so many of these remain outside the provisions of all early codes may be taken as evidence that the *lex talionis* is, as we have suggested, the primal impulse of law: the offenses beyond its

powers are most probably recognised later, and in consequence of a considerable religious development. How far taboos are responsible for them we cannot discuss at this place. Suffice it to say that the cuneiform literature reveals to us a large number of offenses which immediately entail a species of taboo upon the offender. None may eat of his table, drink of his cup, or associate with him in any way, without being tainted thereby and subjected to similar excommunication. The banned person is shunned as if infected by the plague. We have the theory of the temporal rewards of evil-doing reduced to a minute and logical series of details. The person is solemnly declared accursed; or the curse is formally invoked upon him. Such a person, among primitive races, is "cut off from among his people." In the code we find this excommunication in the case of the person guilty of incest with his son's wife; and the same idea is really involved in the disinheritance of a son who has lain with his stepmother. The curse of Jacob upon Reuben is a direct application of the law of Hammurabi. Beyond these principles the code does not go: leaving to the domain of religion or to social discipline some offenses that are within the provisions of more modern secular codes. In this respect the Babylonian law is paralleled by the Hebrew, with its large list of accursed offenses. The Aryan law is in the same condition. The main difference is that the list of curses in the Hebrew code apparently antedates the largest ceremonial development, while in the Babylonian banning texts the list of ceremonial infractions involving excommunication for a longer or shorter period, is larger; and in Menu it is simply prodigious. We have relative stages of development thereby suggested.

But this method of punishing one's enemy, when the courts could not deal with the case, by pronouncing an excommunicative curse upon him, was capable of large abuse: and all early codes show the effort to limit it. In the code of Hammurabi, the imprecator must show that the case is one recognised as deserving a curse. In the early Aryan code, certain devices must not be used: apparently the effort is to stop the practice altogether. In the Hebrew code, curses may be invoked in the name of Yahveh; but there must not be invocation of the spirits of the dead, or strange divinities, or the

supposed spirits of evil. Such cursing is not in the name of Yahveh, and witchcraft is accordingly viewed as idolatry. A childlike confidence in the potency of such imprecations or incantations belongs to all branches of the human family: the practice is not, in any of its phases, purely Semitic. The witch is believed to have real power, and using it to slay or maim, is to all intents and purposes a murderer.

It is a fundamental principle of the code of Hammurabi that the presumption is always in favor of the innocence of the accused: the burden of proof is thrown upon the accuser. This but parallels the moderately developed judicial procedure of all peoples. But the fact that the laws are not yet conceived as expressing the will of a corporate body known as the state results in there being no such personage as a state's attorney to conduct the prosecution. Nor is there a royal prosecuting attorney: while Hammurabi is the actual compiler, he conceives the laws to be really from Shamash. There is no grand jury to find a true bill: no penitentiary representing outraged society; for while primitive society has really made the laws, it is not yet fully conscious of the fact and in consequence attributes to them a different origin. Not merely is the burden of proof upon the accuser, but in all primitive society the entire burden of accusation or indictment falls upon him. In this respect the legal procedure of Babylonia seems to have been that of all early nations. Even Aryan peoples have known no other till a relatively recent period.

It is very early apparent that under such a system the more plausible speaker may have too distinct an advantage in his presentation of his own case; and there is too much advantage with the popular favorite, in case the matter is argued before the popular assembly, as in ancient Greece or modern Africa. The balance of personal factors that was partially established in primitive society by control of the *lex talionis,* is seriously disturbed. Hence a delegated judicial body of some sort may appear very early; usually in the form of a council of the chiefs or elders, as among the North American Indians. It remains the essential feature of early Semitic

courts; it remains in Babylonia in a highly developed form, and is but slightly modified in the more advanced Aryan procedure.

But we find other things are needed to meet the difficulty and the idea of so framing the judicial administration that it may prevent crime rather than punish, seems to be attained very early. We may feel sure that this is one reason of the early development of the law in Babylonia, that every sort of transaction concerning which dispute might arise should be committed to writing. The court's task is largely reduced to the examination of documents: there is an insuperable barrier to forensic eloquence, and the plaintiff without documents, when they were possible, is nonsuited. Possibly no other judicial system so thoroughly eliminated prejudice and passion. But we have no Babylonian oratory.

The conducting one's own case does not appear to have been superseded among the early Hebrews. We have not, however, the insistence upon carefully prepared and attested documents, which we find in Babylonia; but in the Babylonian Talmud they become prominent. In Greece, on the other hand, we find the paid attorney developing: but he is a product of the rights of the popular assembly; there is no delegation of popular authority to a senate, and any one may speak upon any case. This is also the practice of the African popular assembly. The sheer love of speechmaking, of intellectual combat, soon produced men whom litigants endeavored to retain, as champions of their interests. The Greek advocate was a great orator, rather than a technical, methodical lawyer. And there is no provision for the prevention of a wrong.

But in Rome the early inhabitants show the powerful clans or *gentes* collecting in a single city, with the same complaint of the *plebs* against the clan-lords that we find so frequently voiced in Israel. The assembly of clan-chiefs is soon modified by an elective system, and early experiences convince the Roman state that it would be better to thwart the oppressors of the *plebs,* than to punish them after the wrong was done. The situations in Rome, Babylon, and Palestine are closely parallel. Rome meets the situation by creating the great tribune of the people. His prohibitive authority is all but unlimited. His person is sacred, and made

so by the law. The great principle here established remains in our vetos and restraining injunctions. The Hebrew also had his great tribune of the people. But he had no legal standing. The elders, the primitive courts, had not recognised the necessity of his existence: the Babylonian document was unknown in this legal procedure: the only legislation upon his position eventually put him under the control of the formalists he had ever opposed, and placed no power whatever in his own hands. He was compelled, by the very nature of the case, to adopt the Greek method, to betake himself to public oratory: but to direct it to the Roman ideal: to the prevention of wrong. Hence his repeated protests in behalf of the plebeians are based upon purely moral and religious grounds. He must find, if possible, the conscience of the people; there was neither secular organisation, nor constitution, nor publicly posted code, to which he could appeal: he could quote no codal law for many of the evils he assailed, for legislation upon the subject did not exist, nor was there a legislative assembly through which he could secure such law. This "speaker" of the Hebrews is the *nab'i*. He is parallel to the Roman tribune in his battle against oppression. Each was a social necessity, as was the dispassionate appeal to records in Babylonia. As an immediately effective agency the Hebrew prophet was the least valuable, and his unorganised state went down soonest. As the creator of a public conscience essential to the perpetuity of the effectiveness of the systems of Rome and of Babylon, he is indispensable. Greece, with neither of the methods, soonest lost her political pre-eminence.

But the Roman lawyer really antedates the tribune of the people, though the latter is an expression of the principle from which the Roman lawyer grew. Cæsar, describing certain powerful Gallic clans, tells us that the clan chief held himself responsible for the protection of each member of the clan, which he thinks peculiar; yet it was the earlier Roman practice and survives to-day in the Italian *padrone*. But the worldwide custom of assembling the heads of *gentes* or clans to adjust differences quickly developed, after the founding of the Roman state, the principle of delegated authority; and this soon carried with it the growth of a body of men

skilled in the law, to whom the adjustment of all difficulties is delegated by the plaintiff and defendant.

Now at this point the Babylonian law shows some tendency to the delegate-principle. In later contracts we deal repeatedly with cases that but suggest the agent or client of a large firm, handling business by power of attorney. In reference to the method used to prevent fraud and diminish litigation, we should observe that the Babylonian law appeals at every stage to the religious impulses. A solemn oath binds all contracts. Parties to a suit in like manner bind themselves to accept the decision of the court: apparently a reminiscence of the purely advisory powers of the early *melek*, or sheik. In Aryan development we have the same thing, in the derivation of the "king": like the Semitic *melek*, he was "the wise one," or "adviser." But while the religious obligation seems to have been powerful in Babylonia to the end, in Assyria there certainly was degeneracy. We have judicial decisions from the Sargonid period, which indicate that penalties solemnly invoked in an earlier age were actually undergone in the later age to induce a god or a court to release a man from his oath. The gross obscenity of certain late Assyrian oath formulæ points in the same direction: to a "bloody city, full of lies and robbery."

That the owner of any piece of property shall be held responsible for any mischief done by it is a generally recognised principle of law in all lands. The degree of such responsibility is much larger in the primitive stages of law than in the later era. Public sentiment in civilised lands would not sustain a verdict of murder in the first degree against the man whose vicious ox had gored some one to death, though it would demand heavy punishment. Measured by modern ideas, and the tendencies in such laws, we should decide that the Babylonian law was in this respect a stage in advance of the Hebrew.

This principle again is involved in the responsibility for trust funds and safe deposits. Here, however, limitations occur. The Babylonian trustee is held responsible for the keeping of his own house: and if the property of another man be stolen from his house, the loss falls upon the trustee. But on the other hand, if the

robbery take place upon the highway, the carrier, or agent, or peddler is blameless, and nothing can be collected from him. But in such case the loser may be indemnified by the city or magistrate within whose jurisdiction the robbery took place. Early Hebrew practice reversed this latter procedure. The elders of a settlement by a ceremonial observance repudiated all responsibility for a secret murder in their district: but the repudiation was, in reality, a species of admission, and merely illustrates the very primitive state of the administrative or police organisation. But the Babylonian official was required to keep the highways clear of robbers. The intra-mural requirements were perhaps not different. The robbed trustee was expected to pursue the thief and recover; however, it is hardly warrantable to assert that the burden of detection and arrest lay solely upon him. We may rather suppose that his method of recovery lay in reporting the loss to the city authorities. That the general public interested itself to a certain extent in such matters is illustrated in a letter in which two men report that a golden tablet which was stolen from a temple they have observed in the possession of a certain stone-cutter.

Now, this principle of clan-responsibility for deaths or injuries is familiar among all primitive peoples, and as an inter-clan principle has never ceased to be active: giving us to-day the principle of indemnities known to international law from time immemorial.

But as intra-national law, it has been a strong factor in empire-building, as in ancient Babylonia; clan cities being made to realise the necessity of a common code to eliminate constant internal friction. In the extent to which the responsibility is attached to the chief officer of the district, we have a suggestion of Sumerian or Mongolian origin: akin to the large application of the principle still known in China. The individual responsibility for dykes and levees is unique: in other ancient peoples the levee system seems public, or communal; and the principle of individual responsibility is not emphasised as in the Hammurabi code. But the laws concerning trust funds and deposits are not essentially different from those of other ancient codes.

Marriage seems viewed by the code purely as a civil institution.

Priests may have been prominent in the ceremony, but we do not know of them. The essential legal features are the carefully drawn documents, and the attestation of consent by representatives of both families. We have in the code and decisions a survival of the time when all marriages were arranged by the parents of the bride and groom. Their consent is still technically essential to marriage, though they cannot separate a young couple who unite in spite of them. We have decisions concerning cases where the parents of one or the other of the contracting parties complained that the marriage had been without their consent. The judges decide that the young woman must then wear the badge of a concubine, instead of that of a matron. But parental displeasure can go no further: and this state of affairs is terminated by the death of the objecting parent. The brothers of the stigmatised woman must formally recognise and endow their sister's marriage.

At this point then we may recognise a marked diminution of the ancient *patria potestas*: a compromise between the authority of the parents and the inclinations of the young people. After the first marriage there is no restraint upon the woman's freedom of action, save such as may be necessary to guard the property-rights of her children. She may marry where she will, none of the family having any legal right of protest; and the widow's authority in her own house certainly is above that of the widow in the Arab tribe in Mohammed's day, or in the days of Hebrew corruption when the prophets urged justice to the fatherless and widow; when all Hebrew codes put together had but four enactments concerning the rights of married women.

We may not be sure of the source or cause of this modification of parental powers. It cannot be due to primitive Semitic influences, for the early Hebrew recognises the right of life and death as vested in the parent. The father could sacrifice his son or daughter; he could offer the lives of his sons, as Judah did, as security for faithful fulfilment of a bargain. He could marry his daughter to whom he would; he could take his daughter, as Saul did, from her husband, and give her to another; he could sell his daughter, (Exodus xxi. 7,)as Rachel complained she was sold: both of which we have

seen that the angry Babylonian parent could not do. Even in Deuteronomy the power of life and death is reaffirmed, in the case of a troublesome son: the offended parent in Babylon could go no further than disinheritance: and even that step could not be taken without the consent of the court. The Talmud also recognises that a parent can legally take away his daughter, though it insists it should not be done: adopting practically the Babylonian law, while admitting Hebrew theory. So in ancient Roman law, the *patria potestas* was absolute. Virginius was perfectly within the law in slaying Virginia. So was the King of Moab in sacrificing his son: though like sentiments seem to have been aroused against Appius Claudius and Jehoshaphat. The Roman father also could take his daughter from her husband, as Saul did Michal; and this forced separation could be construed as legal divorce. So in the fragments of old Sumerian legislation we find this same paternal power: the father could sell his son as a slave, and seems to have had the right to put him to death as well. The same law remains in China still, cases being common enough. The prevalence of infanticide among the heathen Arabians cannot be certainly construed as mere *patria potestas,* for it was offset by the practice of killing the aged and feeble. On the other hand, the Greek parent does not appear to have had such absolute powers; nor do we certainly recognise it in primitive Aryan laws. This rigid principle may then have been Mongolian in origin. The Etruscans and Sumerians are alike suspected to be Mongols; and Etruscan domination certainly affected early Roman institutions. We might thus explain the sterner laws of both regions, in their earlier years; but the humanisation of the code of Hammurabi we must evidently consider to be a result of the general development of civilisation and public sentiment, rather than of peculiarly Semitic ideas.

Neither the code nor any other Babylonian remains at present show us any trace of the levirate marriage. This was well known to the early Romans, and to the early laws of the Aryans; it remains even in Menu. It is familiar in the Hebrew records, even in the time of Tobit; it is provided for in Deuteronomy. If we regard it as a relic of polyandry, we shall be compelled to admit the

Sumerian had developed very highly, to eliminate an institution so familiar to the primitive Mongol, and so prominent in Thibet to this day. If the idea is merely that of abandoning one clan for another, we may understand its loss is due to the displacement of blood-clans by labor-clans. The great guilds of Babylonia have displaced the old social divisions based upon kinship. Such industrial development would logically eliminate the levirate; a widow would marry then within her guild.

Divorce is far less easy in the code than in the Koran, or in the Hebrew codes. There is no opportunity for divorce at the mere whim of the man, by a mere verbal dismissal. Courts are in charge, and charges must be investigated. But among the heathen Arabians, the utmost laxity prevailed. Mohammed's law to control the abuses is rather ludicrous. As the same woman was often divorced and remarried by her whimsical husband, the curious measure was adopted that such husband could not reclaim his wife till she had first been married to another man: precisely the reverse of the Deuteronomic law (xxiv. 1-4). The Deuteronomic law provides for a written certificate; the patriarchal law, like the Roman, did not require such. But the Chinese law has from extremely ancient times demanded that a husband give the parents of his divorced wife a written statement of the reasons for the divorce: which document may become the basis of legal procedures. And such legal procedures, with forfeits of property, were inevitable in Babylonia.

The Babylonian Talmud considers that a marriage is legal and binding when the contracts are drawn up. In the earlier times of the Hebrew people we do not find this; and the rabbins who have held this up as an evidence of the superior character of the Hebrew law have simply been innocent of any remembrance of the land whence they derived it.

Though the formal bonds and contracts were essential to the full title of wife or matron in Babylonia, children were regarded as an end of marriage; and the fruitless marriage might be amended in various ways. But barrenness constituted no ground for divorce. Penalty for unreasonable divorce, seven years' earnings for a skilled laborer, was so heavy as to render divorce impossible to the masses.

There was far more latitude in ancient Rome and Greece as among ancient Semites; though as a practice the earlier Romans had a horror of divorce. Spurius Cavilius Ruga, A. U. C. 523, has been asserted to be the first Roman who formally divorced his wife; but the practice was disgracefully common in the days of Rome's luxury. Nor was there in the Babylonian husband's hands the supreme power that was granted to the Roman husband. The tradition has been left that Roman wives were accustomed to absent themselves from home three days in the year, as a precaution; one year's continuous residence under the husband's roof transferring to him the power of life and death formerly held by the father. In primitive Aryan law we seem to miss this masculine domination: it develops later under Brahminism. Woman's position was apparently higher with the early Aryas than at many later periods. We may consider that there was degeneracy even in Europe, till the rise of feudalism and the development of the standards of chivalry. In the Homeric songs woman is the prize of war as completely as among the later nomad Semites. In widowhood especially woman's position through all the East became one of peculiar hardships. But in all these less advanced social systems, as with the higher Babylonian, there is one common feature: the man marries the woman, divorces the woman. She does not take a husband, nor divorce one. She merely compels the man to grant her a divorce. The *sadiqa* marriage lies far back of the era of Hammurabi.

Very striking is the high rank accorded to the agriculturist, in the Babylonian social system. This is certainly non-Semitic: the high place of the farmer dates from old Sumerian days. Literati develop their standing later. Mechanics rank after the farmer; merchants lower still. In the Hammurabi code, we may observe in the wage scale that the highest wages are those of the first-class farm laborer, though the code dates from the days of the pastoral Semites. In the list of officials, K.4395, the merchant still ranks below the gardener. This is the more striking in that it comes from the Sargonid age, when the Babylonian merchant had made the city famed for centuries throughout the world. Even the kings of the pre-Semitic age seemed to rejoice in the title "servant of Adar,"

(the god of agriculture,) or "farmer." In far later times the "Farmer Prince" or "Great Farmer" is the title of a great official; and it seems to have been borne occasionally by the king himself. Semitic kings, however, preferred the title of "Faithful Shepherd": thus perpetuating the tradition of their pastoral origin. In this actual collision of two modes of life we may perceive an historic basis for the tradition of Cain and Abel. We may compare with these facts the title of the Hindu Prince, the *Gai-kwar* or "Cowherd" of Baroda. But we are most forcibly reminded of the high rank theoretically accorded to the farmer in China, and of the fact that the "Son of Heaven" must there guide a plough around a field with his own hands, to emphasise the high place of agriculture. The secondary position of the Chinese merchant, with his painstaking, methodical honesty, also forcibly remind us of the great city of the ancient East, with its great early development of commercial supremacy. All this commercial law, like the position of the agriculturist, seems to have been fully developed ere the political dominion of the Semite. Such is the legitimate inference from the habitual use of the Sumerian in the critical phrases of early Semitic contracts.

Edwin Markham has drawn us the picture of the "Man with the Hoe" in all the ancient world. We may observe its marked contrast with the social position of the Babylonian farmer. We cannot then find any trace of Ur-Semitic affinities in this ancient land. The law is not only unlike the Hebrew, and his gradual pauperisation of the wretched Canaanite tiller of the soil; it is still more unlike the system of the nomadic Arab shepherd patriarchs. Not only is the farmer awarded the highest place in the industrial world, but the debtor-laws give him the largest possible protection. We may contrast Egypt, where the wretched fellah has ever been what he still is. Amenemun writes to Pentaour, court poet of Rameses II: "Have you ever represented to yourself the state of the rustic who tills the ground? Before he has put sickle to the crop, the locusts have blasted part of it; then come the rats and the birds. If he is slack in housing his grain, the thieves are upon him. His horse dies of weariness as it drags the wain. Anon the tax-gatherer arrives; his agents are armed with clubs; he has negroes with him

who carry whips of palm branches. They all cry, 'Give us your grain,' and he has no easy way of avoiding their extortionate demands. Next the wretch is caught, bound, and sent off to work without wage at the canals; his wife is taken and chained, his children are stripped and plundered." In the *Praise of Learning* we read, "The little laborer having a field, passes his life among rustics; he is worn down for vines and pigs, to make his kitchen of what his fields have; his clothes are heavy with their weight; he is bound as a forced laborer; if he goes forth into the open air he suffers, having to quit his warm fireplace; he is bastinadoed with a stick upon the legs, and seeks to save himself: but shut against him is the hall of every house; locked are all the chambers." Such was Egyptian bondage.

We need not detail the situation of the wretched field laborer, or serf, during the Middle Ages. The parallel is plain to all. It is clear that we cannot find the Babylonian system paralleled among the highly developed Aryans, even though their name signify "ploughmen," till we reach the most democratic of modern nations. From the agriculturist's view-point, America might most nearly stand for the modern equivalent of Babylon.

As has been previously remarked, a chief excellence of the law of Babylon was its thorough protection of the debtor. We have as yet nothing to equal Hammurabi's safeguarding of his rights in any other ancient code. His situation was decidedly better than under many modern systems. As compared with the Hebrew, the Babylonian code is immeasurably superior. No claim could be pressed against the debtor without documentary proof. The right of levying upon him or of attaching his property without his consent was not granted. Risks on crops were divided. The failure of a crop or its destruction by floods when the rental contract gave the landlord a share in the crop, or when a loan in cash was made to a struggling farmer, did not mean that the loss would fall solely upon the debtor. In the case of renting on shares, the landlord was held to the letter of the contract: he got nothing. In the case of the loan, interest due for that year was cancelled, and the time extended a year. If a loan had been made secured by a lien on the

crop, the handling of the harvested grain was not permitted the creditor. Nor could he take advantage of the debtor's straits and secure bargains by forcing a sale of the debtor's property for a fraction of its value and buying it in. The crop conditions were carefully noted each year, and the standard price for the season, "the king's price," was publicly posted everywhere. Any creditor taking a part of the crop for his debt took it at "king's price." Nor could the creditor help himself from corn in field or in store. The principle of exemption was known. The work-ox of a peasant could not be levied upon: he must not be rendered unable to till his land.

Every reader of the Old Testament recognises how all this contrasts with the Hebrew law, and with Hebrew practice as criticised by the prophets. The Hebrew creditor could take everything from the struggling peasant, save his coat. No laws existed, restricting the powers of the creditor, or thwarting his rapacity. In an instant the wretched debtor could be seized for the pettiest claim; the price of a pair of flimsy sandals, and sold into life-long servitude. Worse still, he might raise a family while in such servitude: the children, because of their father's need of a pair of sandals in the remote past, are perpetual slaves. Not even in the grave could the debtor rest. He might have been the greatest prophet of his time, yet if he died owing a petty debt, he might be sure his relentless creditor could seize his children and sell them as slaves. We have the record of a prophet's distressed widow appealing to Elisha under just such circumstances. Even as late as Nehemiah's time, poor Jews who wished to help in the rebuilding of the city were compelled eventually to sell themselves, their families, and all their belongings, for a bare sustenance. An old claim could be revived, and a freed bondsman re-enslaved: no law forbade. This infuriated Jeremiah.

All this was impossible in Babylonia. From her Israel could have learned all that she most needed to learn. The Babylonian debtor, as already stated, had the line of exemption clearly drawn; and the claim of the creditor was confined to the estate and person of the debtor. The latter might hire out a member of his family to work on account of some debt, but this could not be for longer

than three years. Even if he were himself reduced to servitude, it did not enslave his children, nor make a slave of his wife, nor prevent his marriage with a free woman. If he were capable he might enter business upon his own account, merely handing over to his master annual interest on the amount invested in him. His wife retains her freedom, and takes one-half of their jointly acquired property for herself and the children. No claim can be made upon the latter by the creditor-master. An account once closed could not be reopened; the fine for such attempt was from three to sixfold the amount claimed.

We may add also the condition of the Aryan peasant: the law holds him for the debts of his ancestors, as the Hebrew law did; and the Hindu to-day may be born hopelessly in debt for the expenses of his grandfather's wedding; and the enormous rates of interest will result in his paying upon the claim all his life, only to bequeath a still heavier debt to his children. We must grasp all this in order to appreciate the full import of the previously mentioned new law of Deuteronomy and Ezekiel, the close student of Babylon: the son should no longer be punished for the father. "Ye shall no more use this proverb in Israel!"

We do not at present know of any effort to regulate rates of interest in the code: though such sections may have existed in the portion now defaced. The same is true with regard to rental rates. These are referred to in the code as familiar, in the case of agriculture and horticulture; but we cannot say whether they were controlled by law or not. In the code the crop-rent percentage is identical with that customary in America to-day. But as to interest, the large number of contracts showing considerable loans for a short period, with the stipulation that there should be no interest unless the sum was not repaid by a certain date: the sum to draw interest thereafter—these suggest that interest was originally regarded in the nature of a penalty for tardiness. Especially does this seem to be the case where the contracts so often say, "if he does not pay by a certain time he shall add one-fourth to it," without reference to the amount of time that elapses after the money is due. As the contracts between merchant and peddler merely indicate a division

of profits as the final basis of settlement, it is possible that a certain sentiment may have existed against interest or usury. Certainly the rates remained high—twenty to twenty-five per cent. usually, for 2000 years. We do find efforts to regulate the labor and transportation problems, by a fixed scale of prices: and we know in later times of royal efforts to regulate the prices of necessities by the "king's price," that there might be no extortion, or "cornering" the market. The effort most nearly resembling this in other lands we should find in the Roman fixing of a commutation price upon certain staples, in case a tributary wished to pay taxes in produce instead of cash. But the transportation tariff is fixed in Babylonia on a chartering basis; supposing a man to hire a vessel by the day. The intricacies of the per-ton per-mile schedule had not found place at the earlier period, though the general question of such expense must have been carefully estimated: for we find in later contracts choice allowed a debtor. He may pay a certain quantity of ripe dates in his orchard at one time, or, F. O. B. at Nippur or Babylon, during the next month, a much smaller quantity; or a still smaller quantity if delivered later at Susa. The details of commercial fluctuation, transportation, and local valuation seem then perfectly understood, and contracts embodying such calculations are made months ahead. We know of no necessity for an inter-state commerce law, though the length of the life and the ramifications of great business houses give reason to suspect that the later Babylonians eventually had the trust problem before them. But it certainly did not exist in the times of Hammurabi: the loans of that period are notably minute, as compared with those in Persian times; and the trust problem must have grown from the powerful guilds or wealthy clans. In all this field we are practically without Hebrew legislation, but with much prophetic preaching.

We can not observe in the code, in the disposition of property, anything that answers precisely to a will, in our sense. The apparent suggestion is that if there are any special dispositions of property, the recipient must be put in possession by the donor in his lifetime. This would preclude the possibility of forgery, imposture, or pleas of mental incapacity in regard to wills. But where special

gifts are not made, by either parent—as they may be—, there seems no right of primogeniture recognised. In this we have a fundamental difference from Hebrew law, and from pure Semitic law in general, so far as we know it. But from the various banning texts we learn that an elder brother or elder sister ranked next to the parents in the matter of reverence and respect required; and a deficiency in such respect entails a heavy *kišpu* or ban upon the delinquent. This feature again reminds us strongly of Mongolian—of Chinese standards. In early Aryan law we find a degree of uncertainty concerning the proper apportionment of property, though the elder brother seems to be regarded as the head of the undivided family; but this very uncertainty is so inherent from the beginning that all Aryan systems of a later time, varied as they are, can claim to have something in common with the primitive stage. And in such division of goods in Babylonia the daughters must share: their portion taking the form of dowry at marriage; if not married, a daughter obtains a son's share. This again does not seem to be the early state of Semitic law, and certainly is not the law of the Koran. In that age, in any circumstances, whether as witnesses or as sharers of an estate, two women were assumed to be the equivalent of one man. A woman's property in Babylonia could not be claimed by her husband at her death, in which respect the code is decidedly in advance of the Koran legislation; we are not so clear as to the early Hebrew practice at this point. In case of death without children, whatever property was held reverted to the respective families that had endowed the marriage in the beginning; but property independently acquired was bestowed at the woman's pleasure. In this detail again we find the Sumero-Semitic practice superior to any other ancient code, and to most modern codes. We can hardly esteem this to be Semitic law.

This comparative sketch of legal principles is hardly complete without a statement of one fundamental difference between all Semitic law and all modern Aryan law, of which the Romans are recognised as the founders. We can then understand the more clearly the real failure of the Semite to influence Western law in

any essential: a failure the more marked when we reflect upon his dominance in religion.

Already has been mentioned the fact that the Semite does not possess the abstract conception of the state, or of society, in the sense in which we use the words in connection with law. He has not formed the habit of thinking in abstract terms. Law is to him, as to all Oriental peoples, the expression of a personal will, a personal authority. We cannot conceive a Semite setting up abstract principles of justice and proceeding to assail the very gods with them, as Æschylus or Euripides could do. If the god or king decreed a thing, that was law and right, for the ordinary Semite, though it might be really distasteful to him. The king of the land, the gods of the land,—these were also the law of the land. What was right in Moab might be wrong for the same case in Aram. Decisions might be diametrically opposed in the two lands, and pronounced just in each, as expressing in each the personal will from which all local law came.

The Roman mind could shake off such limitations, and generalise, and think more abstractly. It could readily recognise some general principles or sentiments operant in each province or people, irrespective of race, or creed, or social organisation. Its lawyers soon grasped the idea of a *jus gentium*, contained in the summary *Quod semper, quod ab omnibus, quod ubique*. The Greek dared to storm heaven itself with such a weapon. But where he would have advanced upon the past by openly assailing Zeus, the Hebrew prophet would have said that the masses did not really know Zeus. The Roman reached a system of universal law by eliminating personality, creeds, and local interests and prejudices; producing an abstract, unyielding, inerrant justice. This the Semite could not do: unable to separate law from personal will, he could create a world-system of law only by the extension of one personal will to all the world, to all the universe. And relation to this becomes not law, in the jurist's sense, but religion. We may understand then why the laws of Hammurabi are given by Shamash, the Sun God, the All-seeing Eye, God of Justice, as those of Moses are given by Yahveh. The codes have developed alike, the same explanation is

offered by the lawyers and codifiers for each. They know no other explanation for law. This is to be remembered in discussing the problems of inspiration.

We must take one step further: the peculiarity mentioned is not a trait found in the Semite alone, though he has given it the highest development. This conception of law as the expression of some personal will is just as much a peculiarity of the Filipino or the Polynesian. It is seemingly common to mankind in earlier stages: it but marks the period when impersonal abstract thought is not yet possible. There is at last a parting of the ways, and necessarily so. No satisfactory secular law and judicial system can be established so long as every perplexity means that men must consult the oracle of The Personal Will, instead of thinking: just as no satisfactory religion can be established by banishing a personality and dealing in intellectual abstractions. Law and religion but represent two stages, two branches, two modes of thinking upon the same problems. And thus we may conclude that the code of Hammurabi belongs not peculiarly to the history of the Semite, but to the history of man; and that it represents the highest secular law attained by way of the earlier method of defining and expanding law.

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A SCIENTIFIC VIEW OF CONSCIOUSNESS.

SO many attempts have been made to give a clear explanation of consciousness that it may appear superfluous to make another; there is, however, a constant human desire to know everything new and reliable on the subject, and this desire seeks to be gratified. Consciousness is one of a great number of "mysteries" by which we are surrounded, it is like a "certain something in the air, that all men feel, but no man can describe," its mystery arises largely from its complexity and the smallness of our comprehension, and as long as we act upon the unscientific idea that belief is not to be controlled by facts or that we can safely believe without evidence, we shall be confused by such mysteries. The mode of action of any one of the senses, especially that of vision, is nearly as great a mystery as that of consciousness. The chief explanation of the large failure of attempts to explain consciousness is, that they have usually been made without the aid of sufficient familiarity with the fundamental principles or methods of science:—the entire history of mankind proves that without extensive and varied knowledge of science it is hardly possible to obtain truthful ideas of the mysteries of nature. Consciousness is a wider subject than that of the ordinary senses because it includes all kinds of feelings from all parts of the body. As the subject is large, only an outline of it is attempted in this article, and as it is complex, the article requires attentive reading.

I. DEFINITION OF CONSCIOUSNESS.

We cannot clearly understand a subject unless we define its chief terms; undefined terms are used as means of evasion in dis-

cussion:—a true definition of it must be one which agrees with all facts relating to the subject, and may be conveniently stated as a clear perception of existences within and around us. According to to a large amount and variety of scientific evidence, ordinary consciousness is essentially a high degree of activity of the cerebellum or "litttle brain," and this organ is generally recognised by physiologists as being the "sensorium" or seat of feeling. We have no proof that consciousness can exist without nervous substance.

Consciousness and unconsciousness differ only in degree, and merge into each other by imperceptible differences. Consciousness is a part of mental action, and the terms "consciousness" and "perception" are nearly synonymous: it is a complex nervous action superadded to vitality, thus trees live but do not feel; it is a part of life in all animals, and rudiments of it exist in certain plants. It is essentially the same in all nations and all ages; all human beings experience substantially the same joys, griefs, pains, and pleasures in consequence of possessing the same cerebral structures and being acted upon by the same general powers and circumstances; at the same time the varieties of consciousness are as numerous as those of human beings.

II. MYSTERY OF THE SUBJECT.

The subject of consciousness has been greatly mystified by an undue desire to know "the inmost nature of things," but this is beyond our powers; we cannot "realise" the "inmost nature" of any thing, simply because it is so extremely profound, and our consciousness and intellect are so very finite; however much we discover, there always remains a vast amount more to be found; our nearest approach to that of consciousness is, that it is a special kind of motion which only occurs in living nervous substance. To ask what it is "in itself" is an irrational desire; in such profound subjects we must be content to learn all we can, and wait for further discoveries. Its "first cause" is equally inscrutable, for the simple reason that in all cases there must be an earlier cause, and so on without end. When we know more deeply the nature

of the senses we shall more nearly know that of consciousness, because the senses and their organs are the immediate basis of it.

It has also been mystified by an assumption of the existence of a "second self" within us, distinct from our ordinary "self," but the probably true explanation of this "second self" is the occasional separate excitement of one only of our two cerebral hemispheres. We know that memory, perception, observation, attention, comparison, inference, and imagination, are all more or less acts of consciousness:—we also know that by means of dreams, illusions, etc., and inferences from them, that similar phenomena frequently occur but are barely observed within us, and that these slightly noticed cerebral actions tend to influence our conduct in a similar manner to the fully noticed ones:—we have often a faint degree of consciousness of our dreams on waking, but such faintly conscious dreamy phenomena are far more consistently explained by unequal cerebral action than by the hypothesis of a "second self." Such sensorial actions are often unnoticed, either because they too feebly excite the cerebellum, or the latter is either too obtuse or too preoccupied to perceive them: but they are occasionally so strong and persistent in some persons as to haunt them after waking. Dreams are often fortuitous medleys of ideas uncontrolled by comparison and inference, and are probably produced by the cerebral circulation exciting latent imprints of the sensorium in an irregular manner:—they are not, however, always medleys, but are in rare cases consistent series of thoughts and tendencies to action automatically produced under undisturbed conditions. We have in a slender degree occasionally the power of observing and criticising our dreams during their occurrence, but only at great risk of the dreams themselves being interrupted and of this power being disconcerted by the dreams, and this indicates that the dreaming and observing organs are in some degree separate but very nearly related, similarly to the sensorial and cerebral hemispheres by means of their "commisures." Through deficiency of suitable knowledge the ordinary waking thoughts of some persons are much like those of dreamers. The idea of consciousness has been still further mystified by the assertion that it still exists in some occult

form eternally after death:—but if the existence of myriads of "souls" in space is a reality, the omnipresent radiations in space should be affected, and we are far more likely to detect their existence by means of scientific appliances than by our unaided consciousness, because the former are very much more sensitive than the latter.

III. DEPENDENCE OF CONSCIOUSNESS UPON NATURAL CAUSES.

Consciousness depends upon a number of conditions and circumstances, the chief of which is the presence of nervous living matter in a state of motion. The fundamental cause of it is the natural energy of our environments acting through the senses, but the immediate cause is the action of the senses themselves. Nearly all parts of our body, and especially its outer surfaces, are supplied with sensory nerves, and the sensorium is automatically excited through these nerves by numberless external and internal influences; and as these influences are of various degrees of strength, and the sensorium varies greatly in sensitiveness, consciousness is of all degrees of intensity, varying from the faintest perception to the greatest pain or pleasure, from peaceful sleep to raving madness. Its degree depends upon the physical state of the brain, the extent of its excited surface, and the intensity and suddenness of the excitation:—it is the loudest sounds, the strongest lights, the greatest pains and pleasures, and the most sudden of all these, which most excite it; in inflammation of the brain or of its membranes the least sound or light excites it greatly. It is often increased when several senses are simultaneously excited, thus lightning accompanied by thunder is very impressive. The perception of optic images by the eye may be regarded as a part of consciousness.

Consciousness is aroused by a great variety of influences, usually by all those which excite the brain or senses, its most common cases being hunger, thirst, and desire. In consequence of the multitude of causes which affect it, it varies from minute to minute, and each man's brain is in a number of different conscious states in

succession, thus the man asleep and awake, drunk and sober, are very different persons. In ordinary cases the actions of the two halves of the brain blend together similarly to those of the two eyes, but in some cases the same individual appears in inconsistent characters at different times in consequence of inharmonious cerebral action. The degrees of this variation of consciousness in the same human body has in some cases been so great that the "original self" and the "second self" have entirely forgotten each other, and the changes from one state of the sensorium to the other have happened suddenly:—such great changes as these nearly always occur in emotional persons, and are regarded as signs of insanity. As consciousness is not an independent entity, but an active sate of nervous substance, its changes in such extreme cases cannot be reliably ascribed to the existence of two different persons in the same body, but to inharmonious action of the two cerebral hemispheres. Great bodily changes cause great alterations of consciousness: the change from grub to butterfly must be an extreme one.

IV. MODE OF EXAMINING THE SUBJECT.

Further, the rise and fall of consciousness entails other changes, thus the series of cerebral alterations attending an act of perception does not end with it, but leads to other occurrences:—it gives rise to trains of thought, reflex muscular actions, changes in the viscera, etc., or its energy is stored up like the heat of the sun in coal, and accumulates in the system, ready to be expended in action when liberated. In such a very complex subject the human brain is too small to grasp all the phenomena, their causes, relations, and effects, and the best way to arrive at truth in it is not to accumulate a large number of complex personal narratives, but to examine it by the aid of such a theory as agrees with all known facts and all their logical consequences. A suitable theory is supplied by the great principles of universal causation, evolution, motion, radiation, automatism, action and reaction, etc. It has been proved, largely by means of the spectra of substances and by astronomy, that all bodies, human beings included, are in a state of incessant motion,

both internally and in their masses, that they are in a state of continual change of motion, of increase and decrease, growth and decay; that these movements and variations of movement are the essential causes of other changes in all living and dead substances: that all bodies more or less automatically act and react upon each other; that even the different invisible movements in bodies influence each other, thus every substance, whether living or dead, is always sending rays of heat and of other forms of motion to, and receiving such rays from, all other substances, and is thus continually influencing, and being influenced by them; the sun, radium, and magnets are familiar examples:—we know that rays of light exert pressure on solid bodies; and it has been shown by experiments with a cube of lead weighing seventy-four hundredweight that a variety of substances emit rays which affect a voltic cell (see *Philosophical Magazine*, 1897). In these and many other ways every different substance and creature behaves as a different aggregate of movements and as a different machine.

V. DEPENDENCE OF CONSCIOUSNESS UPON NATURAL ENERGY.

We may conclude from these facts and a multitude of others that nervous matter is always moving:—that cerebral motion is essential to consciousness, that automatic action and reaction are universal, that the human machine is largely automatic, and that automatic action in the human body is essentially the same as that in inanimate substances. There is continued action and re-action between man and all things around and within him; all his organs act and re-act upon each other; we are all of us influenced by food, weather, our servants, neighbors, creditors, the tax-collector, by all who know us, and by all kinds of circumstances within and without, and we re-act upon them from birth until death. Our feelings influence our intellect and our intellect re-acts and restrains our feelings: we feel, and by reasoning we know; we know and consequently we feel.

Some of these powers act upon us without our directly perceiving it, thus by influence of food and air we grow, but we do

not feel the act of growth; by that of gravity we are carried through space at the rate of more than eighty thousand miles an hour, without feeling it. Even our volition is no exception to automatic action and re-action, thus we cannot by an effort of will alone prevent feeling cramp, colic, or toothache. The chief natural energies are vastly stronger than man: under their dominion he is like "clay in the hands of the potter," they move him before he knows why, even when he commands he must first obey, and although action and re-action are equivalent in every case, stronger power universally overcomes weaker: in this way man submits to all sorts of pains and calamities, and individual consciousness is governed by national. We fancy that we are governed by a "spiritual ego" within us, because the effects we wish follow so certainly our volitional desires and we cannot detect their origin, but as we cannot create energy we only act when we are acted upon, as when our stored-up energy is transferred or set free by some unnoticed natural change. In nearly every act of volition there is some influence so feeble, or our attention is so preoccupied, that our consciousness does not perceive it, but that does not prove that it is a spirit producing energy out of nothing. The error of believing that "mind" is a spiritual entity is so extremely insidious and tenacious that it deceives millions, including many of the most learned persons. Natural energy acts throngh us as it does through all animate and inanimate bodies, and it is only when our volitions happen to agree with its operations that they succeed; usually we only try to carry them out when the natural conditions are favorable because we know that it is useless to try when they are not. But although we cannot directly overcome natural powers greater than our own, we are stimulated by our failure to indirectly render them subservient to our desires by the aid of suitable knowledge, and this is strikingly shown by the numerous triumphs of science and art.

VI. RELATION OF AUTOMATIC ACTION TO CONSCIOUSNESS.

Various parts of our nervous system may be automatically active without exciting the sensorium, thus the nerves which regu-

late our internal organs are always active, our lungs breathe automatically, the heart beats unceasingly, the stomach digests during day and night, each without exciting consciousness except when diseased, and we even walk to a large extent automatically. Each sense acts automatically when acted upon by its own special causes, and appears to have a locality of its own in the sensorium. Spontaneity and persistency of consciousness, so necessary to professional eminence, depend largely upon training, education, and state of bodily health. The great perfection of expression, direction, and sense-action, which occasionally occurs in our dreams shows how perfect even mere automatic brain-action may be when undisturbed.

Inanimate natural energy is the most fundamental prime-mover in human conduct; it acts whether we feel it or not: consciousness comes next, and intellect the last. We are usually impelled more powerfully by our environments, poverty, lack of food, etc., than by feeling, and more often by feeling and sentiment than by intellect; life is too short to allow us to reason out every action before performing it. Why is intellect so generally weaker than feeling? Simply because it is evolved out of it, and that during this transformation some energy is converted into heat and and lost by diffusion: we know that thinking makes the head hot, and that nearly all transformations of energy are attended by loss. That the origin of consciousness is automatic is proved by the fact that when all its causes and conditions are present and its preventives absent, we cannot by our strongest desire prevent its occurrence; thus we must feel the cold of winter and the heat of summer whether we are willing or not. Consciousness, similar to all other forms of motion, is subject to neutralisation and inhibition by opposing influences; one of the conditions of our being conscious of any particular feeling or idea is that the brain be not preoccupied by a contradictory or a stronger one; thus we cannot attend to a trifling matter whilst fully occupied by an opposite or a serious one; similarly a substance cannot be in two contradictory states, such as hot and cold, at the same instant. This inhibition of feelings and ideas by each other explains the seeming fortitude

of warlike Indians, sectarian martyrs, and others, whilst being tortured; their brains being filled with stronger and opposite feelings and ideas.

Automatic physical action underlies prospective as well as immediate conscicusness, "we live, and move, and have our being" in the ever-moving ether; probably everything within and around us, by its motion and properties, produces more or less permanent impressions upon our nervous ganglia; these impressions remain latent, and the strongly fixed ones are always ready to be excited by various causes. The number of such latent imprints must be enormous: it has been estimated that the total number of nerve-cells in the *grey* surface-matter of the human brain capable of receiving such imprints is about 2000 millions, but only a small proportion of these are considered to be used in dreams and conscious thoughts, the others being idle. Memory is aroused by the action of various external and internal influences upon these impressions: and during association of ideas, different parts of the cerebrum and sensorium act upon each other through an endless number of microscopically fine connecting nerve fibres which compose the *white* portions of the two organs. As nervous matter is a very soft solid substance it is specially fitted for receiving impressions, and as it is very mobile and the white nervous masses are full of nerve-fibres, it is highly capable of transmitting them. Of the multitudes of our bodily actions and surroundings continually existing and changing, only a very small proportion distinctly excite our consciousness, and the great bulk of them pass by without notice, though probably not without producing some latent impressions upon our sensorium; these impressions constitute the initiating material of our dreams and of many of our waking ideas.

VII. NERVE SUBSTANCE INDISPENSABLE.

That consciousness is really a nervous action is shown by the circumstance that where nervous matter first appears in the long series of living plants and animals there also consciousness commences: it is further proved by the fact that the greater the degree

of excitability of the sensory nerves and ganglia the greater is that of consciousness. As it only occurs when the excitement of of the sensory-nerves and centres is sufficiently strong, it is essentially a certain degree of sensorial activity. It varies greatly in different individuals; the nerves of some persons are so sensitive that their consciousness, hopes, and fears, vary with each passing cloud. General consciousness is greater and more varied in man than in any other animal, and is more reliable in trained than in untrained persons.

VIII. LIMITATIONS OF ALL HUMAN POWERS.

Man is a very minute part of the universe (all mankind are only about a 100 million millionth part of the earth) nearly all his powers are extremely small in comparison with those of inanimate nature; his nervous system is only a part of his body, his consciousness only occurs in his brain, and fully only during his waking-state. Under the most favorable conditions his perception of sound only extends through a few octaves, and of light not beyond the mere red and violet rays of the solar spectrum. His power of scent is much less than that of the dog, of vision not equal to that of a hawk, and of rays of magnetism, wireless telegraphy, or gravitation, he has no direct perception. The smallness of his consciousness is chiefly due to that of his organism, and that of his intellect is partly occasioned by losses of energy during its transformations from that of his food to that of his judgments. During sound sleep none of his actions or surroundings excite his sensorium, and during his waking-state the greater portion of them are not perceived. He requires time to perceive things, because inertia of the organs has to be overcome, or their excitement to subside; certain periods of time are required to transmit nervous influence to the cerebellum, to feel a sensation, to think an idea, to compare ideas, to form a conclusion, or decide upon an action. It has been found by means of experiments that the period of time required to perform a single act of thought is about a twenty-fifth part of a second. We neither lose consciousness nor regain it all at once, we gradually fall asleep

and we wake gradually from it, and consciousness increases by degrees as our various organs enter into action, similar to motion spreading through a large mass of machinery. We cannot instantly realise all the details of a landscape.

We cannot have all we want, nor simultaneously possess contradictory attributes:—in consequence of the smallness of his cerebellum, even the the most learned man is unable to fully imagine the infinite, the absolute, or the perfect: he fails to perceive the vastness of the universe, or his own immeasurable littleness or feebleness in it: of the immensity of time, space, or energy, he has barely a perception, he cannot even realise the idea of a million years, a million miles, or the millionth of an inch. This extreme narrowness of consciousness entails an immensity of ignorance which affects all our thoughts and actions and is a source of innumerable "evils": In consequence of ignorance we overvalue trifles which stimulate our feelings, and underestimate great things which do not excite us:—a great majority of mankind knows very little about their own bodies, and this ignorance largely results in producing disease, shortening human life, and limiting human progress and population.

In addition to the influence of *size* of the sensorium upon the extent and variety of consciousness, that of its *quality* must be important, because we know that favorable heredity, training, and education tend to produce intellectual ability, refined sentiment, and perception of truth; it is well known that a healthy state of the brain and well-balanced consciousness are necessary to proper conduct. Better quality may more than compensate for smaller quantity and surface of the brain, and a smaller brain may do more good work than a larger one. Great size and surface of brain promote ability by affording a larger receptacle for knowledge, whilst superior quality accompanies better selection and use of it; wisdom is a nobler possession than knowledge. Some persons of very great ability have had very large brains, and some who have possessed large brains have had very erroneous ideas through deficiency of truthful principles.

IX. UNRELIABILITY OF CONSCIOUSNESS.

Consciousness, when imperfectly corrected by training and knowledge, is essentially crude and unreliable, and often a dangerous faculty; it is subject to a great variety of illusions, delusions, and hallucinations: thus a stick seems bent when thrust obliquely into water, and the sun appears to revolve around the earth. The human sensorium occasionally sees, hears, and feels, things which do not exist, and which are merely illusions excited in it by natural causes, such as habit, expectancy, desire, nervous excitement, etc., thus we occasionally hear our alarm clock ring or a knock at our bedroom door, when they do not really occur; or a man whose leg has been cut off, still feels sensations of his toes. We all of us suffer more or less from uncorrected feeling, and the number of human errors, delusions, illusions, failures of memory, accidents and crimes, due to untrained consciousness, is immense. The frequency of disordered consciousness is shown by the great number of lunatics. The only fundamental remedy for these "evils" is discovery and diffusion of new knowledge.

Consciousness is largely modified by our dual anatomical structure, especially by that of our chief nervous ganglia. The human organism is largely double: its limbs and most of its internal organs are in pairs; the sense organs, brain, cerebellum, and spinal cord are each divided vertically into two similar organs or halves, and in each case the single organ or the half one usually acts in place of, supplements, or corrects, the actions of the other: thus a man having only one lung, kidney, or leg, may live:—we can hear better with two ears and see better with two eyes than with one. Similarly we feel and think more fully and correctly with the two halves of the sensorium and cerebellum than with one, provided they are alike and healthy; and it has been observed that "persons suffering from disease of one-half of the brain only, often lose the power of comparing and reasoning correctly." In consequence of the duality of its nervous system, "the chameleon is able to allow one side of its body to lie torpid in deep sleep, while the other side is perfectly

awake," and as its two eyes and optic lobes can act independently it is able to look in opposite directions at the same instant.

Discordant action of the two halves of the human brain largely affords an explanation of the peculiar phenomena of the "second self," double consciousness, and somnambulism. The cerebral hemispheres are not always alike in size or condition, in some cases one is diseased, or is at intervals stronger or more excited than the other. In consequence of this occasional unbalanced power of the brain, the individual is at one period governed more in his thoughts and actions by one hemisphere than by the other, and at other periods the reverse, and his conduct is inconsistent.

The consciousness produced by comprehensive ideas is often less exciting than that due to small personal matters, because the feelings are not involved, and because the greatest truths are frequently inconspicuous:—whilst it is the noisy, violent, and sudden phenomenon which most excites, it is the long-continued, incessant, and feeble ones, which ultimately produce the greatest effect; and small habits, by long continuance form human character. It is similar throughout inanimate nature; given unlimited time, the smallest cause produces infinite effect: thus mountains are washed away by mere drops of rain.

Our unnoticed bodily changes bring us gradually to death; multitudes of persons die prematurely, or become insane by the slow progress of insidious disease, and this is one of the ways by which the powerful influences of nature limit the world's population. We exaggerate the effects of alcoholic over-drinking because they are so palpable to our consciousness, whilst we minimise the more serious ones of over-eating because it requires more intellect to perceive them. In various ways we live in a state of false security through the narrow limits of our sensorium and consciousness; thus national decay is so slow that many persons doubt its existence, or only perceive it after it has largely advanced. As we are largely compelled to be ignorant by circumstances and by our limited consciousness we cannot be fully expected to believe or understand the greatest conclusions of science, and hence we find many persons quite impervious to clear scientific truths. In the midst of all this

the painful effects of ignorance compel us to seek knowledge, but even in producing new impressions on our sensorium by means of scientific research we do not actually create new knowledge but only evolve it out of the evidence existing within and around us, and had we sufficiently extensive and comprehensive faculties we might reliably predict all that will be from all that is:—we already do so in the subject of eclipses and others. Successful prediction is the most certain test of truth.

X. GENERAL BASIS OF CONSCIOUSNESS.

Consciousness is manifestly based upon the actions of the senses:—the senses are founded upon the mechanical, physical, chemical, and vital properties of their organs, and are intimately related to the great scientific principle of universal natural causation, the ever-present conditions of time, space, and motion, and to all the modes of motion, known as heat, light, electricity, radiation, etc. We are conscious because our sensorium and our organs of sense move, and they move because their excitants move, and the stronger the movements of the excitants and of our senses, the greater, usually is the degree of consciousness. We perceive things because they act upon and move us, and we move because we perceive; we are painfully moved by witnessing distress. Throughout nature motion is not created, but only transferred, transformed, diffused, or stored-up; the only cause of motion is some previous motion, and so on without end so far as we know; that which has no motion cannot move our senses nor our muscles. Human consciousness is excited by the same universal motion which incessantly moves all inanimate bodies. All life is motion, and the only way to keep alive is to keep in motion: when we fall asleep we lose movement and are less alive. Heat is a species of internal motion, and the human body produces about three times as much heat during the day as during the night when we are not conscious. All light, heat, and sound are vibrations, they affect our consciousness even when they appear to be uniform.

XI. RELATION OF CONSCIOUSNESS TO CAUSATION AND MOTION.

The relation of consciousness to motion and to change of motion is very profound: the fact that exclusion of light and sound quiets the brain, proves that cerebral movement is intimately related to them. Similar to every other action of material substances, consciousness is inseparable from universal natural causation; i. e., it always happens a minute period after its immediate cause, and this is owing to inertia of the sensorium, etc., having to be overcome:—to arouse it, a movement must be sufficiently fast, but not too rapid, thus the movement of the hour-hand of a watch is not immediately perceptible, and that of a very rapidly revolving axle is also not perceived. Simple unvarying motion has but little effect upon our sensorium; it is only when some sudden change of motion (which is itself a movement) occurs within or around us, and produces an alteration in that organ, that consciousness happens. A mother wakes when her infant cries, but a miller wakes when his mill stops; we only know two new shillings from each other when we can detect some slight difference between them. Very uniform influences make but little impression upon our consciousness; thus we cannot directly perceive the existence of time or space, the great velocity of the earth in its orbit, nor even the influence of atmospheric pressure or of gravitation upon us, and we only know with certainty of their existence by comparing impressions and drawing inferences from their differences. A perfectly uniform electric current is but little perceived, whilst even a feeble one, if slowly intermittent, produces a strong sensation; suddenly varying strong light also strains the sensorium. An electric current varying with immense frequency in opposite directions, as in Tesla's experiments, but little excites the sensorium, because each successive opposite wave neutralises the effect of the immediately previous one before the inertia of the nervous matter has been overcome. The inhibitory effect of opposite phenomena upon each other is universal, and indicates the essential mechanical nature of all action, whether conscious or unconscious.

The very foundation of consciousness, and of all human conduct, whether conscious or unconscious, moral or immoral, lies deep in the movements, properties, and capacities of bodies. All our actions, whether bodily or cerebral, appear to be capable of being represented as in harmony with a perfect mechanical system: and parallels of all of them may be found in mechanics, but the labor of showing this clearly would be great. The neutralising and conflicting effects of opposite movements of masses or molecules upon each other, are essentially similar to the inhibition of feelings and ideas by contradictory ones. If all material bodies were perfectly alike in properties, they would have very little effect upon each other, but as they are all different, and as no two men are entirely alike there is continual conflict. It is differences of conscious impressions and ideas that largely keep mankind in motion, and which cause collision between the advancing and retarding sections, the intelligent and the ignorant, the scientific and sectarian: and we know that bodies moving at different rates or in different directions, cannot remain united.

XII. RELATION OF CONSCIOUSNESS TO CHEMICAL ACTION.

That consciousness is within the domain of scientific experiment is proved by the fact that it can be increased, decreased, or destroyed, by various natural agents; thus alcohol, strong tea, quinine, strychnine, or rise of bodily temperature, increase it:—chloroform, morphia, chloral, trional, etc., decrease it;—whilst a small quantity of prussic acid, or a concussion of the brain, destroy it altogether:—great thirst, or cerebral inflammation produces intense consciousness. That it is intimately related chemically to the oxygen dissolved in the arterial blood of the brain is shown by the circumstances that during excitement of mania, there is great oxidation and waste of brain, the products of which, in form of phosphates, are found in the urine:—the rapid waste of brain also during deep meditation limits the duration of our power of attention. One of the methods of reducing consciousness is by diminished the oxygen in the circulation: thus many animals pro-

mote sleep by covering their noses and breathing the impure deoxygenised air from their lungs. The circulation of duly oxygenised blood through our arteries during the waking-state is a constant cause or condition of feeling, thought, and action. The great fact that consciousness is dependent upon many natural conditions proves that it is itself natural; and we are not morally justified in fixedly believing without evidence that it is supernatural.

Farther:—there is a systematic order of relation between it and other natural phenomena:—thus the sense-organs are evolved out of material food by vital processes, the senses out of the particular structures of those organs, consciousness out of the senses, comparison out of dual acts of consciousness, and inference and reasoning out of comparison. During this series of changes the stored-up energy of food is transformed into vital energy of the sense-organs, that into the energy of the senses; the energy of the senses becomes that of consciousness, and that of consciousness turns into that of reasoning-power through the medium of comparison, which is itself essentially dual perception. In this order energy of intellect is produced, and some heat is lost during the process.

XIII. SENSORIAL IMPRESSIONS.

The sensorium is a storehouse of memory, and an incomplete register of our pains and pleasures. The latent impressions made upon it are fixed by repetition and habit, ready to be revivified by associated ideas, and by the oxygen dissolved in the blood, Much of our happiness and misery depends upon these imprints; if they are untruthful they are liable to produce pain because they contradict each other, and those persons who have a mixture of truthful and untruthful ones, often do not know what course to pursue.

Multitudes of persons suffer in this manner, and are driven to seek consolation in irrational hopes and unprovable ideas, by the clamor of their desires. Under the influence of cerebral excitement and memory malicious persons are rendered liable to suffer from uncontrollable malicious dreams and ideas, and in some cases

have even committed murder and suicide whilst under their influence. The foregoing and a multitude of other "evil" effects due to unregulated consciousness, show the necessity of truthful ideas, proper food, pure air, judicious exercise, and pure blood, to healthy consciousness. It is well known that gout makes the sensorium irritable.

XIV. DEPENDENCE OF MORALITY UPON CONSCIOUSNESS.

The relation of consciousness to morality is very extensive. "As we feel, so we act," unless intellect prevents it. All moral acts are conscious ones, and the conscious state is a requisite condition of all moral action; we are not considered morally responsible for acts performed by us whilst we are unconscious, nor even for those we commit during dreams or somnambulism, nor whilst we are insane:—the compulsory influence of natural causes is usually recognised in such cases, but how far a person is allowed to injure his fellows even when compelled to do so by internal or external circumstances, differs in every different case and depends upon a variety of conditions. Our feelings compel us not only to commit "evil" but also to resist it.

Simple automatic consciousness, uncorrected by knowledge and inference, is frequently a great deceiver, thus we often wrongly estimate magnitudes, numbers, distances, periods, volumes, and weights; we make mistakes with regard to existences, events, persons, forms, colors, and appearances, and this gives rise to innumerable false beliefs, lawsuits, sectarian and political conflicts, wars, diseases, accidents, and crimes. Our senses and feelings afford us a mixture of truth and error, from which we have to sift the truth by means of experiments, comparison, inference, and analysis. The actions of all our limbs, organs, and faculties, are similarly more or less unreliable, and even our most highly corrected scientific knowledge is frequently only approximate. We are all of us in different degrees "blind leaders of the blind," and a large proportion of the pains we suffer and inflict is due to the circumstance that we are kept in ignorance by our very limited powers. Similar to moths flying into the flame of a candle, so we are compelled by our instincts to

hasten unknowingly toward disease, insanity, crime and death. Untruthful consciousness misleads millions, and we are compelled by natural influences to expend much of our time in elaborating and diffusing untruths and illusions, and but little in discovering new knowledge.

XV. DEPENDENCE OF BELIEF UPON CONSCIOUSNESS.

Consciousness and belief are closely allied, as we feel, so we usually believe, especially in difficult subjects: internal and external influences cause our feelings, and these, with or without correction by intellect, determine our opinions; we cannot always stay to investigate. The great advantage of consciousness in causing us to believe and act is its quickness, and that of intellect is its greater reliability; it needs more time to reason than to feel because reasoning requires us to compare two or more feelings or impressions. Consciousness alone produces only blind belief, but reason produces reliable conviction. As reason is frequently weaker than feeling, it is our higher faculties rather than our lower ones which most require stimulating. Consciousness is fallible because it does not compare its impressions but acts immediately upon them; it determines our conduct more frequently than our intellect because it acts wholly automatically; but when it has been properly trained it is often our best guide and produces similar results. Automatic consciousness is like a "ready reckoner," it saves us the trouble of calculating:

> "Reason, however able, cool at best,
> Cares not for service, or but serves when prest,
> Stays till we call, and then not often near
> But honest instinct comes a volunteer."
>
> —Pope.

XVI. LIMITED SENSITIVENESS OF HUMAN CONSCIOUSNSSS.

Our senses and consciousness are very dull in comparison with inanimate agents, a wave of light travels 700,000 times faster than one of nerve-energy, a photographic surface detects thousands of heavenly bodies which we cannot even see with the aid of a telescope;

a bolometer is estimated to be about 200,000 times more sensitive to heat than our skin; a galvanometer can show the influence of one part of chlorine in 500,000 million parts of water, whilst our taste cannot with certainty distinguish one part in a million; a photograph is a much more extensive, minute, and certain record than our brain; and even the process of reasoning can be mechanically performed by means of Jevous's "logical machine." We depend very largely upon the properties of scientific appliances for our beliefs; the microscope, spectroscope, telescope, photography, the kinematograph, etc., have brought a new world of impressions into our consciousness, and as such instruments, processes, and methods are free from personal prejudice, and vastly surpass in delicacy and reliability our senses and perception, it appears highly desirable that they be used for testing the idea of telepathy and the hypothesis of the existence of human spirits in space.

XVII. RELATION OF CONSCIOUSNESS TO TRUTHFULNESS.

The relations of the sensorium and consciousness to truthfulness are of a most practical kind; immovable false beliefs, fixed impressions without evidence, and ignorance or lack of cerebral impressions, are dangerous, and contradictory ones destroy peace of mind. As the sensorium of criminals and insane persons is moved and governed by the same natural influences and laws as those of the wisest men, we are all of us compelled to believe more or less untruth, and are largely unable to get rid of false impressions. Consciousness includes both truthful and untruthful impressions; we often believe, though we cannot really know, that which is untrue; and without proper and sufficient evidence we cannot with certainty know anything. The properly trained sensorium can contain a much larger number of impressions than the untrained one, because its impressions do not contradict each other, and are systematically united together by truthful principles. The phenomena of false belief, unprovable belief, belief without evidence, delusions and illusions, belong to the subject of mental disorders; and the question as to how far we are morally justified in believing

serious statements without evidence, or believing and diffusing unprovable statements in such matters, belongs to the subject of scientific morality. The moral duty of improving our minds by receiving the truths of science is already to some extent recognised. The hopes of the human race depend largely upon scientific correction and extension of consciousness:—the discovery of new knowledge is the starting-point of human progress, and as the possession and application of great truths is the chief remedy for the pains and "evils" of life, original scientific research is a very practical matter, but the process entails a vast amount of labor.

As consciousness and all our faculties are so extremely limited in comparison with the contents and powers of the universe, it is not surprising that only a few persons can fully realise the idea of universal natural causation, or "whatever is, must be" under all the conditions and circumstances, and consequently the necessity of crime, "evil," and conflict. In the continual presence of so much pain and misery in nearly all directions, it is almost beyond human power to even faintly imagine the still further truth that "whatever is, is right," yet both these conclusions must be come to if we scientifically and thoroughly examine the subject.

The chief claims of the foregoing "view of consciousness" upon our attention are:—it agrees with the principle of universal natural causation and with all well-verified knowledge:—it involves no real self-contradictions:—by its agreement with these, and by its self-consistency it gives us confidence in the natural powers which govern us, and imparts greater confidence, courage, and carefulness to all our thoughts and actions:—it affords us consolation by showing that our trials, if properly accepted, are often our greatest blessings;—and by its truthful explanation of the real cause of the shortcomings of mankind it makes us reasonably tolerant towards all men:—but as this view is a comprehensive one, it cannot be accepted, nor its advantages secured without the labor of acquiring sufficient suitable knowledge.

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THE PRAGMATIC INTERPRETATION OF THE CHRISTIAN DOGMA.

A SUGGESTION AS TO THE NATURE OF REALITY.

WHILE the pragmatic point of view is suggestive to many as a working hypothesis, it seems that there is much uncertainty as to the consequences if it is taken as an ultimate statement of reality. It is felt to be a view of things that has a measure of truth but which is at the same time subject to serious limitations. In a word, it is doubtful what sort of a reality it presupposes and with what sort of a reality it is able to satisfy those who follow it consistently. I do not presume to hold any of the illustrious expounders of pragmatism responsible for the interpretation here offered. It is simply an attempt to explain what pragmatism means to me. It is no doubt an inadequate and onesided statement, but this is an evil inherent in all our philosophy and from which there is not the slightest possibility of our escaping. If there is any one point that seems to be a fundamental one pragmatically it is that every thing and all things that we can possibly say are essentially abstractions from and hence inadequate to the reality of what we know in immediate experience.

As a philosophical method pragmatism seems to be primarily an attempt to interpret consistently the world of expereience, its movement and its moments, It is thus that it is distinguished from science, which is concerned with the contents of experience. It is distinct from previous philosophy in that it does not seek to construct by logical processes a reality that lies partially or completely beyond the world of experience. In so far as philosophy has been

concerned with things or contents, as such, its field has not been different in kind from that of science. It has been rather mediæval science, vaguely guessing at what science failed to discover, and finding, as science extended its outposts, that its only ultimate and secure ground was in the sphere entirely beyond all possible experience. It is needless to say that the pragmatist stands for something radically different from this. He proposes to deal with a reality but not one that the progress of science will eventually take from him. His realities are the moments and movements of experience as it deals with the realities of science.

As suggested above, the real, whatever it is, is a great deal larger than can be stated in any formula or series of formulas. Our philosophies as well as our sciences are abstractions, and are therefore true only relatively. We shall try in this paper to illustrate by means of a particular abstraction, the nature and limitations of the real that a pragmatic view of things seems to afford us, and further to show that it is a case typical of all our attempted formulations of experience. By experience we mean not that of the empiricist, nor something present to some absolute consciousness after the manner of the idealist, but rather experience as it is naïvely understood when one says he knows that this task is hard because he has tried it, or as when one says that he can sympathise with us because he has already experienced sorrow. It may roughly be called the world that appeals to us directly, the world in which are our values and in which we work, struggle, aspire, win and fail. No philosophic system or science has ever given us an adequate description of it, nor have they ever stated its meaning as a whole. When the last word has been said we feel that it has all been extremely inadequate as compared with concrete experience. The condition under which alone a scientific or philosophic statement can appeal to us with any force is that it be taken in a context similar to that in which it arose. To take an extreme case, the theory of Thales that all things are made of water, would not seem as unilluminating to us as it probably does, if we could reproduce a concrete situation similar to the one that led him to make his famous hypothesis. Philosophic and scientific systems are then simply formulations of some

particular aspects of experience that have for some reason come acutely to attention. The reality of immediate experience seems to fall apart, its elements to be in conflict. We seek a statement to bring together the conflicting elements and the statement is valid in so far as it does this and no farther.

It is a matter of indifference what we have to say about the more ultimate meaning of our working hypotheses. We may say, if we choose, that because this or that hypothesis works, in so far it is a correct statement of the nature of the ultimately real. Functionally the working hypothesis has no claim to being a statement of ultimate reality beyond its meeting this crisis or others similar to it. It may also be noted that there is no appeal from immediate experience or from that which resolves its tensions. The only way to discredit the former is to bring forth another experience that is more immediate or of wider extent.

Suppose for a moment we assume that there is a reality beyond that of our stream of experience, or possible experiences; a reality that is supernatural or at least greater than our experience but of which our experience is in some way a part. Concerning this hypothetical larger reality we may make a certain supposition on the basis of which there is sought a control of some present tension. It is assumed that there is something real that does not fully enter into experience but which must nevertheless be acted upon if that which is in experience is to be dealt with adequately. The theories of atoms and their modes of combination within the molecule are illustrations of the legitimacy and necessity of this type of assumption in physical science. The religious consciousness furnishes a similar illustration. Here also there is the hypostatising of an order of existence that does not enter into immediate experience. There is a supposition of a universal moral order, of a supernatural being or beings that have some connnection with the process of our experience. Particular things are undertaken on the strength of such moral order or of such a supreme being. A crisis or problem arises which to the religious consciousness seems inexplicable except on the supposition of a God who is just, or jealous, or loving. It is clear that the only basis for such an assumption is the presence

of a real experience which seems to demand some hypothesis to make it intelligible. All may not agree that the particular hypothesis offered is a satisfactory one, but that is immaterial here. Manifestly the point of emphasis is the experience that is to be made intelligible and only secondarily is a more ultimate form of existence implied. It is because the emphasis is where we have indicated that it is maintained that the true function of philosophy is to attempt a description, not of some more ultimate reality than that present in our finite experience, but rather the exact and objective conditions under which hypotheses appear and their relation to the onward movement of experience. Strictly speaking, aside from our world of experience and its successful hypotheses there is no more ultimate existence as far as philosophy is concerned. We may here recur to the fundamental limitation of all thinking to which reference was made above. Restated briefly it is this: thought and the products of thought are to be interpreted, and hence are valid only, with reference to certain crises or tensions that arise in action. It is not permissible to take the conceptual machinery thus evolved and hold that it gives us a cue to the construction of a reality beyond experience. The concepts of the chemist are true because they enable him to control his reactions, but he has not the least right to assume that he has therefore in them an account of the ultimate nature of matter. They give an account of it only as it is concerned in practical experiences of the sort with which the chemist deals. It is an almost universal tendency, however, to take these statements that seem to give us definite control under specific conditions and to generalise them into dicta about absolute existence. As opposed to this tendency it is here maintained that our concepts are only functionally valid and do not refer to ontological realities. All our realities are of the functional variety. They *are* realities *because* they serve these definite functions, and for no other reason. Some of them have a wider variety of uses than others and hence appear in a greater number of our practical experiences. As such they seem to have a high degree of objectivity. "Objective reality" is in fact our name for those elements which appear in the greatest variety of situations and mediate the most varied experiences. Such

a statement does not dispute the reality of the world but simply tells in what it consists. It amounts simply to this, that whatever else reality may be, as far as we are concerned, it is something involved in the onward movement of our experience and all our descriptions of it are with reference to its function in this onward movement.

This functional view of reality is very suggestive when applied to the facts of the religious consciousness. The religious attitude is of all others pre-eminently a practical one, that is, it is primarily concerned with the conduct of life. An examination of it, from this view-point, should be practically suggestive in these days of religious reconstruction. It should throw light upon the vexed question as to the place and authority of the dogmas of past ages in the modern religious consciousness. It is worth while to inquire whether they should be rejected *in toto* as false or whether they have a certain validity, and if so, what. Does the dogma of the Trinity, for instance, have any claim from this point of view to being a valid statement of the being of God? We should note first the context in which some of these dogmas originated.

It is well known that New Testament Christianity was not dogmatic but practical. That is, it did not promulgate the dogmas of a system of religion but was the exponent of a certain manner of life. "The teachings of Jesus do not appear in a systematic form, but in terms of life and social relations. It requires laborious research and reconstruction to formulate them into scientific statements. Neither do the apostles present the Gospel in a theology, although doubtless they come nearer to it than Jesus does, and that is why theology took its point of departure from them rather than from Christ. But still, even with them, while the theological material is more accessible, there is no systematic arrangement nor attempt at true philosophical explanation. They wrote for specific practical purposes, and always massed their teachings so as to bear upon the end in view....The New Testament is a book of religious truth, not of theological science; and it is content to state this truth in its practical aspects, upon the sole authority of Jesus Christ, and

not because its philosophical foundations have been worked out and approved."[1]

"The distinctively theological interest which first began to make itself strongly felt in the church during the second century centered immediately in Christology and the doctrine of the Trinity. These doctrines were converted into dogmas by the first six general councils.... They are justly called the Greek contribution to Christianity, for they were born of the Greek spirit, and their form and development were decisively determined by Greek philosophy. That these dogmas soon ceased to be living issues and to find a place in the interests of men, did not disturb their theological authority, but rather strengthened it. The fact that they became petrified made them an all the more satisfactory, because unshakable, foundation for a church that was built upon the traditions of the past."[2]

It is this development of practical belief into dogmas that we wish to examine. There are a number of problems involved in such an examination. One of them is our tendency to generalise our practical concepts into statements of ultimate reality. Does such a procedure render them of more practical significance, or does it rather indicate that the practical need that called them forth has vanished, and that new needs have taken their place? We hold that it was not merely because the Church came into contact with Greek thought that its practical concepts were turned into dogmas but that it was due to a certain peculiarity of the development of experience. Another problem is as to the legitimacy of such a generalisation and the implication as to the reality of the resulting concepts.

We may use the doctrine of the Trinity as our first illustration. As we have seen, it does not appear as a dogma in the New Testament, for primitive Christianity was concerned with the concrete problems of life. Thus the concepts on which the dogma was later founded and which are to-day interpreted in the light of the dogma, were essentially the expression of definite practical situations and problems. It is true the idea of the Trinity was present, but purely

[1] Osborn, *The Recovery and Restatement of the Gospel*, pp. 171, 172.

[2] Osborn, p. 75.

as a practical concept. It had developed in the centuries immediately preceding the Chrisian era under the influence of Greek thought. It grew out of the notion that God could not act directly upon the world but only through certain intermediaries, as angels, his word, his spirit, etc. Hence when anything occurred which seemed to demand the explanation of supernatural influence, it was natural to attribute it to the spirit of God or to his angels. In this form it is not a dogma but simply a working concept that is in harmony with the current notion of God.

This is certainly the context of its appearance in the New Testament. Wherever the Spirit is mentioned it is with reference to just such practical problems or crises within experience, problems that demanded some sort of explanation. For example the mysterious conception of Mary is explained thus. The baptism of Jesus differs from that of John by the presence in it of this divine element. Certain peculiar states of mind, or changes of mental attitude that seem to transcend experience come to attention, and these are interpreted as caused by the Holy Ghost.[3] That it is essentially a practical concept comes out most clearly when Jesus seeks to allay the sorrow of the disciples over his departure by promising the Holy Ghost as a comforter in his place. In no case do we find reference to the Spirit except when some real or conceived situation of life is in the foreground. If with their peculiar heritage of thought these practical situations were met in the light of such a concept of the relation of God to man, we shall certainly not wish to deny its validity, but to maintain that it was essentially illogical to turn this doctrine into a dogma and postulate as ontologically real what

[3] As examples note the case of Zacharias cited in Luke i. 15, 35; that of Elizabeth in the same chapter, 41, 67; that of Simeon, Luke ii. 35. So also through the concept of the Holy Ghost is explained the state of mind that lay back of otherwise unaccountable actions. Thus in Acts iv. 31, "They were all filled with the Holy Ghost." It is a means by which one may be endowed with wisdom, Luke xii. 12; an assistance in defending the faith, Mark xii. 36. It is the agency by which one's entire mental attitude may be changed, as in Acts viii. 15, 17, 18, 19; x. 44, 45, 46; xi. 15-16; xv. 8; xix. 2-6; Titus iii. 5. Prophetic power is to be explained by its presence, Luke ii. 26; iii. 22. Our own attitude of life is modified by it, Romans xiv. 17; xv. 13; 1 Thes. i. 6.

had reality only as it served certain functions in concrete life. How could its practical significance be enhanced by its being generalised into an ultimate view as to the nature of the person of God? Every thinker must feel that the reality of God is far greater than can be crystallised in any such relation of son, spirit, and father. Such concepts are simply ways of making his infinitude come into working contact with our life. If the concept is recognised as a working one then succeeding generations with a different intellectual heritage and a different practical conception of God are not so likely to have the older point of view forced upon them. As we change, and our problems with us, it certainly is by all means likely that our interpretations of events should change also.

As with the question of the spirit of God, so with that of the Son. His significance was certainly a functional one. Whether we take the standpoint of those of his time who expected a Messiah or that of the Christian world of to-day, we must admit that he was significant to them and is significant to us primarily because he is conceived as the mediator of certain definite experiences. With the modern Christian the significance of Christ is certainly as an interpretor of God. The phrase, "What would Jesus do," however objectionable it may be, is at least evidence of this attitude. The dogma as to his metaphysical relation to God is meaningless except in so far as he is also functionally real. If the orthodox could only realise that this is the point of primary import, there would be less useless controversy with the more liberal believers. On the other hand, the liberal needs to realise that this tendency to crystallise a functional reality into a dogma is not mere perversity but itself needs to be explained and located and is no doubt an unavoidable peculiarity of the movement of thought.

In the New Testament times it is of course true, as every one knows, that the followers of Christ conceived him rather in terms of a definite earthly mission, more or less, of course, in the light of the earlier Jewish notions, and by no means as bearing a certain metaphysical relation to God. He bore a definite relation to the glory of Israel, if not temporarily, at least in a spiritual sense. The conclusion is then that both the son and the spirit were originally

the embodiments of certain practical attitudes related in a certain way to the tendency that became prominent among the Alexandrian Jews to exalt God infinitely above all that is earthly, human, and imperfect, even above all human conception. "From the idea that God is absolutely incomprehensible and infinitely exalted flows the other that man cannot enter into direct relations with him, that he can neither know nor tell what he is."[4]

"This idea that God is infinitely exalted above the world and without direct relations with it, necessarily led to the recognition of intermediate beings, through whom relations might be made possible."[5]

The point of the whole discussion is simply that there existed at that time a certain attitude of mind that could best view its onward movement in terms of son and spirit, and God himself could likwise be best conceived, and no doubt always can be for that matter, as a father. It is further held that these concepts interpreted to the believer certain practical situations, gave him their value, so to speak, and hence freed him for further action in similar directions. We do not question but that such an attitude may still exist and hence demand such concepts for its expression. But the point of emphasis, in any case, is upon the tension within a certain type of experience, rather than upon any reality outside this tension. It is only when the specific need has passed, or at least is no longer realised acutely that the conceptual tools are brought into clear consciousness and come to be regarded as having a reality of their own. It is then that the functional reality ceases and the dogma takes its place. If a certain type of mind finds the concept of the Trinity significant, it is certainly a significant point of view, but it does not follow, as has already been said, that because it is true functionally it is also true without reference to any function, that is, ontologically. To hold that it is, is to commit, as it seems to me, a supreme philosophical fallacy. Our only realities are functional realities. If there are others we know not of them.

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[4] Piepenbring, *Theology of the Old Testament*, p. 250.

[5] *Ibid.*, p. 250.

This point of view may be applied with profit to a number of other Christian doctrines. I quote directly from an article by H. Barker in the eleventh volume of the *Intern. Journal of Ethics.* Traditional religion embodied "a great religious or ethical conception, that of a suffering saviour-god. Such a conception appealed directly to faith; it was a gospel of salvation that told of a divine love and pity greater than it was possible to hope for, and summoned men to strive with all their energies to be worthy of their God. Such a gospel was worth believing. It was a true object of faith, and its moral grandeur was a legitimate motive for faith. On the other hand the traditional creed set forth certain miraculous or supernatural facts which guaranteed the reality of its ethical conception." Barker ilustrates the above point as follows: The essence of the belief in the resurrection of Christ on the religious side is the conviction that the personality of Christ has a spiritual value which constrains us to think of it as eternal. A universe in which it passed away and lesser things remained, would for the Christian be irrational. Now this conviction can as little be proved by any ghost-like appearances of Christ after his death as it can be refuted by their absence. If such appearances counted for anything they would be as important in the case of any other man of whom they have been asserted....The truth is that the Christian's religious conviction about Christ craves for some visible sign and confirmation of its truth, and the resurrection seems to faith to be such a sign. The error lies in turning a symbol which only faith can apprehend into the very premise by which the faith itself is proved.... Thus when the symbol begins to be used as a logical premise we may be sure that the faith has lost its intrinsic certainty and is seeking to quiet itself in some outward and inferior guarantee." Putting this point in the terms that we have been using, we shall say that when the practical situations cease to be acutely felt the mental attitude that belonged with them in a manner holds over and finds its guarantee, no longer in its practical efficiency in a certain type of experience, but in the unconditioned reality of that which before had been real only because it had proved itself practically valuable. The intrinsic certainty referred to in this state-

ment of Barker's is the same point we have made regarding all practical attitudes. Intrinsic certainty is the fundamental characteristic of all practical experience. Abstract the experience from the situation that caused it to differentiate and these specialised parts are left as it were in the air. Hence the attention is fixed upon them and they are held to be valid in themselves. This attitude is represented in many types of emotional experience. The virtuoso in the sphere of emotion has abstracted his feelings from the situations in which they belong, in which they have been in consciousness only as contributing to an end toward which the whole experience is moving. He has abstracted them, we repeat, and brought them to the focus of attention, in other words given them a validity of their own. It seems to me that this procedure is strictly parallel to the one we have been discussing in the religious sphere.

Barker continues, "Consider the belief in the miraculous birth of Christ. The absence of any strictly logical relation between the supernatural event and the religious doctrine which is connected with it is here more patent than ever. That Christ was born into the world in a preternatural way is in itself no proof at all that he was an incarnation of the deity, although, of course, to one already convinced of his divinity the miraculous birth has a certain fitness as a symbol." As Barker further points out the symbol has a certain function, for faith comes in pulsations, that is the practical situations in which the symbol is significant are not always at hand, but the attitude of readiness to meet them must be preserved intact and this is the more possible if the tools of the attitude can continue to be held in the foreground. The mind is thus kept accessible to the influences by which faith can be revived. "The Christian whose faith had grown weak attributed the lack of faith to himself as a fault, because he did not doubt that the objects of faith were there to be apprehended, although he could no longer feel their reality and truth for himself." In other words, we represent the values of our past experiences by means of the conceptual machinery they involve, apparently because it can be most easily isolated. The mental concomitants of a practical attitude can never be isolated and still be expected to retain their original nature. It may be the

only way we can represent to ourselves that we have had the experience but we must nevertheless not forget that this conceptual framework is not the original experience. The only reality the conceptual structure or system of dogmas has, its only validity is, in pointing to a time when practical situations *were* very acutely felt.

The significant characteristic of the practical situation is that it is immediate and its reality needs no logical proof. No theory of the universe, no philosophy, can disprove this fact of the immediate appeal of the practical crisis, and its total independence of the necessity of any logical support. As soon as there is felt to be necessity for proving the attitudes involved, the situation itself has passed away. The whole force and significance of the concepts and attitudes depended upon the undisputed presence of the practical situation. Thus "the supernatural facts embodied in the creed do not need to be *disproved* to lose their peculiar value. This value is already lost when they can be reasonably *doubted*. Their peculiar function is gone from the moment they appear to be doubtful."[8] That they are doubted means that they are isolated from their functional place in experience, that practical needs have changed, and hence that different systems of concepts are now needed. The only way to prove any claim of theology is to show its vital relation to the crises of life. No one was ever convinced of the truths of religion in any other way, nor has any one who has believed them from this side lost his faith by mere ratiocination. If such an one has lost his faith, it has been because its vital contact with his life has had ceased and the work of reason is simply to show that what is left was dead. Our point, in a word, is this, that the reality of a practical situation is recognised immediately, and its tools are in the same immediate manner regarded as valid solely because of their functional connection with the situation. There is no other way to prove their truth and to attempt to do it otherwise is to admit that they have lost their functional value and hence are false.

It is suggestive to apply this point of view to the doctrine of the second coming of Christ. There is no question but that the expec-

[8] *Ibid.*, Barker.

tation of this had a very important place in the thought of New Testament times. It is an excellent illustration of the evolution of a belief according to the theory here presented. The Church of today, obliged to admit that the early Church was mistaken in the particular form in which it held to this belief, holds it now in a modified form. But in a sense the early Church was *not* in error. This belief in the second coming of Christ was a part of a more general attitude toward the world and human conduct, and as such it served to mediate a definite practical attitude which was then significant. When this appropriate context disappeared the belief was left stranded and in the eyes of later ages it was manifestly a mistaken one as far as ontological fulfilment went. But the conviction that it stood for an ontological reality has led each generation to reconstruct the belief on a basis that at least offered a possibility of fulfilment. What is true of this particular belief is true of all others referred to above, except that in this one its falsity when taken out of its context was so self-evident that it had to be reconstructed if it were to continue to be believed. Of the other dogmas it was not so evident that they were meaningless when thus isolated, and hence they were more easily adhered to in unreconstructed form.

It is likewise as regards the doctrine of inspiration. The individual who finds in the Scriptures a key that interprets his ethical life asks for no other proof that they are inspired. But the so-called logical proofs of inspiration never convince any one because when such proofs are offered it is evidence that inspiration is now taken as a fact out of connection with the actual unfolding of experience. It is notorious that no argument for the inspiration of the Scriptures, for immortality, or for the divinity of Christ is convincing to any one who does not believe in them already as facts of immediate experience.

In conclusion we may repeat what was stated at the outset, that there is a fundamental limitation to all our thinking. This limitation, however, in no wise invalidates it as some have assumed. There is no better proof of the validity of thinking than that it *does* solve the crises that arise within experience, and that experience

does move on. Thinking is for no other purpose. There is no such thing as absolute thought, for thought is essentially a process of abstraction from an undefined matrix of possible experiences for the solution of particular crises. It means by its very nature that some things are slighted and some overemphasised, but it is justifiable because of the particular tension of the situation that demands solution. If this is the nature of thought it is manifestly invalid to hold that the tools that it creates for the solution of this tension are valid instruments for reality as a whole. That which relieves the tension is undoubtedly an aspect of reality, but it is true of the whole only as the whole is in contact with the particular. We have illustrated this limitation by the evolution of some of the Christian dogmas. The field of religion offers excellent material for such illustration because its attitude is primarily so immediate and practical, and because in it more than in any other there has been a tendency to give the conceptual machinery of this practical attitude an independent validity, thus imposing upon one age the tools that were useful only in ages long past. The evil of such a procedure is, of course, that the new generation mistakes the meaningless intellectual machinery for the essence of religion itself and is in danger of rejecting both together. Respecting this view of truth in its general significance, the words of Barker are significant. "It will hardly be disputed that whatever may have been the shortcomings of primitive Christianity, it was sufficient for the needs of the early Christians."[7] This is the most that can be said of any attitude of mind, of any system of concepts, of any theory of things, and this only can be said. If we attempt more, we drift into speculations of which it can only be said, "They may be true, for aught we know, but we certainly do not know."

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[7] *Ibid.*

ON THE NOTION OF ORDER IN THE UNIVERSE.

MEN have always been struck by the fact of the regularity of astronomic occurrences, and also, though in less degree, by the alternation of the seasons on the earth, which depends upon these celestial movements, by the reproduction of living creatures, whether vegetable or animal, in conformity to their specific type, and, finally, by the repetition of a thousand common phenomena of heat, light, electricity, or affinity under similar or analogous circumstances.

Through the observation of these phenomena there is introduced to our minds the idea of order, and at first this idea signifies periodicity, constant recurrence, because of the aspect of phenomena which impress their first or most obvious mark upon it. But analysis soon shows that this is only a crude and superficial mark; an appearance of stability hides from our short sight the incessant changes of the universe.

Even in the movements of the heavens we discover inequalities and perturbations. The solar system, to which we belong, is but a dab of matter wandering among millions of systems which people space. Imperceptible internal modifications in the course of time alter the relations of velocity and mass within it so as to disturb the economy of the whole; nothing recurs constantly in the same number and form, and we are forced to recognise that the periodicity of these astronomic movements, regular as they seem to our brief observation, is only relative and depends probably on wider systems of periodicity whose rhythms and times we know not,

* Translated from the original manuscript by W. H. Carruth, University of Kansas.

In physical and chemical phenomena,—and in the end everything is reduced to the relations comprised under these two names, that is, to the laws of the constitution of matter,—things present themselves to us under this same double aspect; on the one hand, the constancy of the qualities of matter and the permanence of its laws; on the other hand, the diversity of circumstances, the accidental conjunction of the conditions which cause this quality to manifest itself or that combination to result; here the most rigorous determination, by which every fact is what it is; there the contingent element, that is to say, the seemingly fortuitous concourse of series of events which might not have come about in this particular point of space and at this particular moment of time.

The notion of order would be reduced, then, to this: that the same causes always produce the same results. It would mean the necessity of the consequences under equality of conditions. But it would not do to understand this in the narrow sense of periodicity, as implying the inevitable recurrence of the same conditions, the recommencement of the same phenomena without assignable or possible limit.

As far as we can comprehend it, the world seems to us to be organised for the sake, in a word, of variety, rather than for repetition. The very constancy of the laws permits all the possibilities. When we consider that every substance has its particular properties of density, expansibility, radiation, conductivity, etc., and its fixed equivalent of combination; that for every gas, for instance, there is a critical temperature, below which this gas resists all pressure, and then, that at this temperature pressure on the contrary turns it into a liquid; if we reflect upon the interdependence of all facts, so that the very least action is re-echoed throughout the universe, then we shall comprehend without difficulty that the possibility of new arrangements in it is indefinite and so enormous as to transcend all efforts of the imagination.

And yet, science succeeds none the less in its generalisations. The three domains of light, electricity, and magnetism, which formerly were separated, are to-day united. Thermodynamics, limited at first to the study of the expansion of bodies and to their changes

of condition, now comprises the theory of thermo-electrical phenomena. Immutability, which was formerly regarded as a mark of the class of chemical facts, is doubtless so only in appearance, and the difficulty of finding a mechanical explanation for these facts is due solely to the extreme complexity of the elements under consideration. Moreover, the essential point for the success of our theory is that the relations established among objects supposed to be simple remain the same when their complexity is recognised.[1]

Thus the great variety of possibilities is not a lack of order, since human intelligence manages to find its way among them, being guided by the permanence of elementary qualities and by certain simple principles, such as that of the conservation of energy and that of least action. It is not a lack of order, since the success of our hypothesis depends on their very simplicity. The scientist, after the manner of the poet, imagines analogies, and only those are fruitful which enable him to figure out a connection between series of facts which had appeared to be disconnected.

II.

The living world presents the same contrast. A miracle, which is repeated every day, strikes our attention here at once: I refer to the constant reproduction of beings by generation. In spite of accidents, this is accomplished with regularity for each species. From every fertilised egg there comes forth a new animal of complex organism whose acts are spontaneously co-ordinated with reference to its purpose, which is to live. And the typical form of each creature is so indelibly fixed in the egg or in the seed, faintly differentiated as their germs are to our eyes, that it always develops as the same in its essential characteristics as soon as the favorable conditions of æration and temperature coincide.

As a consequence of these very facts, when we consider the variety of structures of the vast number of creatures and their succession in time, in which is revealed in the whole the growing complexity of their mechanisms, the hypothesis is forced upon us

[1] Poincaré.

that the successive,—if not progressive,—variations of these mechanisms could not fail to correspond to mutations in the conditions of existence. Definite variations, although of limited scope, are produced under our very eyes: the probable causes of them are known to us,—modifications of the environment, the struggle of the organism to adjust itself to new conditions, selection, the inheritance of acquired characteristics. It is even possible for us to add to the work of nature, by making these means serve us in our own experiences.

Over against a relative constancy, here also appears the accidental, the casual. Whether it be transformation or creation, the spectacle is the same in both cases. But the intervention of the casual, that is to say, of the new, of realised possibilities, is subject here in the living world to the law of constant development comprised within the limits of a definite periodicity, which is the life of the planet itself, whatever be the actions which have supervened in the course of this development.

Low temperatures, as has become known lately, diminish the resistance of metals to the transmission of electricity in such proportion that an extremely strong current has been successfully made to pass over a conductor of the smallest diameter, after it had been cooled by plunging it into liquid air. This fact helps us to comprehend how, in an egg, a little vesicle of only a few hundredths of a millimeter in diameter nevertheless contains all the properties necessary to the development of a living being, and at the same time holds in concentrated form all the states of being of previous generations. Furthermore, since such an extremely small quantity of matter suffices for the development of vital energy, it enables us to realise what varied aspects life in other planets may present, what superiority of organism other humanities peopling other worlds might possess.[2]

Moreover, is it not a sufficient explanation of such a variety, that the life of higher organisms results from the harmonious activity of hundreds of thousands of living elements, while these ele-

[2] D'Arsonval.

ments are in their turn the result of reactions of hundreds of thousands of atoms?

Thus in their realm the domain of the possible is equally unlimited. At the same time that she is repeating herself, Nature does not weary of producing anew. A like law of simplicity is found, as one may well believe, in this diversity. Science succeeds here also, in guiding herself by a principle which is analogous to the principles of the least action and the conservation of energy, that of finality or teleology.

The more one studies at close range the physiological machinery, the more one is struck by the adaptation which exists between the various organs and their function. From vegetables to animals, from the humblest creatures to the highest, there are revealed delicate adjustments and proportions which one might consider intentional. Teleology, one may say, is a hypothesis inseparable from the investigation of life; it is a monster which we exorcise but do not kill. Science cannot dispense with it, even when she rejects it under this name; if she is ignorant of the use of a piece of organism, she applies herself to discover it; and these precise determinations of vital adaptation constitute physiology itself.

It is doubtless possible to reverse the proposition and say that the eye was not made to enable the animal to see, but that the animal sees because eyes came to it. At bottom this is only a childish equivocation, for the miracle then consists in attributing to the predestined or fortuitous play of physical and chemical laws the formation of an apparatus so complicated as that of vision, with its parts so specialised and so precisely adjusted: the transparent and lenticular media, the retina, the motor muscles, the specialised nerve, the rods and cones, the sclerotic and choroid membranes. And this miracle is renewed in constant variety for each of our senses, for our apparatus of locomotion, for our viscera, up to the ultimate marvel of the brain, in which is produced the consciousness of self.

No less striking is the picture of the adjustments of life if we consider the ways of animals, the curious habits of bees, for example. They all adapt themselves to one end, which is the success of the hive and the preservation of the species. They do not repeat

themselves in an automatic way; they vary according to circumstances, and their keepers know how to arouse, or to utilise to their own profit, these intelligent variations of instinct.

It is true that we are dealing here with machines already perfected. The aspect of the matter is different if we consider the phenomena of elementary life. Teleology in cells or plastids seems reduced to simple reactions. But the sequence of these reactions in the course of development is none the less worthy of remark. It will be useless for us to trace back the intelligent act to the instinctive, instinct to the simple reflex, the reflex to the chemical reaction, and to imagine the successive stages of this astonishing evolution; we shall not have eliminated for all that the essential problem of the co-ordination of the reflexes with reference to an end which is the same in every instance, and whose interpretative value is never zero or negligeable for the scientist.

In sum, and without wishing to draw any premature inferences from this principle, it remains true that the biologist in his turn, in beginning the study of life by studying its elements, takes for granted the unity of the living world, as does the physicist the unity of the physical world. Between these two worlds there exists without doubt a hiatus; the gulf appears impassable when we consider only the phenomena of the life of higher organisms. It is less profound when we descend to origins; science does not despair of connecting the facts of elementary life with the general properties of matter, and the success of such an attempt will be the clearest testimony that can be furnished of order in nature. For we can suppose and affirm it to exist there definitely only in proportion as it exists for our minds and is formulated in our knowledge.

III.

The reactions which constitute the life of a plant, even if they can be reduced to laws of physics and chemistry, are none the less a unique phenomenon compared with the simple reactions of inorganic matter. Still more delicate are the reactions of animate beings, in proportion as they depart more and more from the type

of vegetative life: sensibility, consciousness, volition, increase with complexity of organism and abundance of forms, and here we have an ultimate transmutation of energy whose scope is assuredly considerable in the economy of the universe.

The results of co-operation, so remarkable even in the communal life of the lower animals, take on their true importance in communities of human beings. Here we see individuals springing from one another yet retaining more or less resemblance, in the same manner as plants and animals. Something, however, changes in them, their morals or their mentality, and these inward changes are expressed outwardly by entirely new relations which are made effective in some other way. The same aim which governs the animal world has impelled man to his social arrangements, and this aim is living, the satisfaction of all demands of life. But we also see how in society he becomes more the master of the conditions of his existence.

Something of initiative seems, then, to be thereby introduced into the necessary train of events; a great complexity of facts is met by an increasing contingency whose maximum is found in the thought of man; necessity, if I may say so, is transformed to a free and reflex action in passing through our consciousness.

One of our most learned philosophers[3] recently opposed to the theory of evolution that of dissolution. He very ingeniously showed, supporting his argument frequently with strong proofs, that all things in the psychological and social order as well as in the mechanical tend toward assimilation, not to differentiation. The actual course of events in the world would nevertheless be such that we should still be permitted to predicate an opposite course. Dissolution and evolution doubtless represent only phases of a universal rythm whose ultimate reason we do not know, and it remains admissible to postulate periodicities of immense duration, into which would fit our phenomenal world, perpetual new beginnings offering constantly new combinations regulated by the same general laws, the same determinism which perpetually governs other contingencies.

[3] M. André Lalade.

To resume, the constitution of the world appears to us to be such that the domain of the possible has no limits there. The variety of phenomena is so bewildering even to the human mind, that the success of science in this field has been doubted. It is undermined on one side even while it is being built up on the other. In truth, science would be impossible if there were not, in spite of all, stable relations in nature. It would be impossible, furthermore, if there did not exist a general system, a direction of evolution, reaching even to communities of human beings, and it is upon the hypothesis of such an order spontaneously sprung from common observation, that the knowledge of psychological and social facts is founded.

IV.

Death is necessary to life. We see creatures, from the least to the greatest, struggling among themselves for the means of existence, devouring one another for food, or destroying one another for the sake of gaining more room. The economy of our world is as hard to comprehend without this law as it would be without the equilibrium of seasons, winds, and waters. But our sensibilities revolt at that which our reason explains: and this disagreement enters into our judgments. Justice, goodness,—whence do we derive these ideas which rise above the mere resistance to pain? How does it happen that we are constituted so that we oppose our ideals to the fatality of things and labor to subdue the forces that govern us? In whatever way this attempt is interpreted, it remains true that man is also a part of nature and that his reason, weak as it is, can and must have its place therein. The laws of our sentiments and of our understanding are not our work; they constitute a part of the great whole. Our inner logic must conform to the logic of this universe in order that it should be depicted thus in our brains. The consciousness of self cannot be pure accident, the individual a nullity, the intelligence which reflects the world a fleeting gleam; and hence our attention is fixed upon the vast extent of an horizon which one cannot narrow down without lessening his own function as a thinking man.

In the class of physical and chemical phenomena we have seen only constant and necessary relations: no system seemed invariable except alternating and compensating destruction and recomposition.

In the phenomena of life we have perceived a law of adaptation: a development, or progressive course, across specific or individual cycles; the action of an internal finality which groups and directs for a time the uncertainties of general conditions. But the purpose is perceived only from without, interpreted with reference to the needs of the mind which conceives it; and the purely psychological problem of teleology remains to ascertain whether consciousness precedes adaptation, or whether it follows and accompanies it.

In the class of social phenomena there appears, over and above an end perceived and desired and a perceptible order, the consciousness of a plan, the idea of a higher control exceeding the limitations of simply biological beings. But the conception of such a plan is founded only upon an analogy between our thoughts and a thought in the world; nevertheless it is permissible, since it is innate, since it is realised in part by our own efforts, and since we ourselves are comprised in this universe. It is the definition of the plan, of the desired order, which remains impossible and chimerical, apart from what we conjecture and imagine concerning our own destiny.

Constant relations, an order, a plan, such, then, would be the stages of the philosophical hypothesis. We follow them up to the last, in spite of our reservations, when once we have reached this critical point where our inductions exceed our data, and the mind with difficulty resigns itself to not crossing this indeterminate frontier which separates verifiable conjecture from that which cannot be verified.

LUCIEN ARRÉAT.

PARIS, FRANCE, 1904.

CHINESE SCRIPT AND THOUGHT.

COMMUNICATION OF THOUGHT.

IN China the most ancient mode of recording thought was accomplished by *chieh shêng* (結繩) or "knotted cords," which is alluded to by Lao-Tze in his *Tao Teh King*, 道德經,[1] (written in the sixth century before Christ) as the ancient and venerable, though awkward, mode of writing, and also by Confucius in the third appendix to the *Yih King*.[2]

All detailed knowledge of the use of knotted cords in China has been entirely lost, but we can easily understand that it was a mnemo-technic method of remembering data of various kinds and communicating ideas. The same practice prevailed in ancient Peru as well as among the islanders of Oceania, and seems to have been common all over the globe among the peoples of a primitive civilisation.

In South America the knotted cords are called "quippu" and some that are still preserved in ethnological collections were used to indicate the tribute to be paid to the Incas by the several tribes. They consist of woolen threads, the different colors of which represent different kinds of produce: corn, wheat, fruits, furs, etc., while the number of knots register the amount or measure.[3]

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[1] See *Lao-Tze's Tao Teh King*, Chapter 80.

[2] Section 23. See James Legge's translation in *Sacred Books of the East*, Vol. XVI, p. 385.

[3] What can be done with knotted strings is well illustrated by the fact that a string alphabet has been invented for the use of the blind in which the letters are indicated by form or arrangement. The knots are easily made

Herodotus informs us that King Darius when fighting the Scythians gave his orders to the Ionians in the form of a leathern thong with sixty knots in it, thereby indicating the number of days in which they should expect his return. We thus see that the Persians employed the same mnemo-technic means that have been discovered in several South Sea islands as well as in America, and we may assume that the ancient Chinese knotted cords (*chieh shêng*) also were in principle the same.

Knotted cords were replaced by notched bamboo sticks, and the incised characters may in olden times have been as primitive as are mnemotechnic communications of the American Indians, such as prayer-sticks and such other pictorial writings as are still extant.

* * *

The invention of writing in the proper sense of the word is credited to Ts'ang Hieh (蒼頡), also called Shih 'Huang (史皇), the "Record Sovereign" because he is the protector and patron saint of history and archival documents. He is said to have lived in the twenty-eighth century B. C., and having ascended a mountain overlooking the river Loh, he saw a divine tortoise rising from the water. It exhibited on its back mysterious tracings of letters which "lay bare the permutations of nature to devise a system of written records,"[6]—a report which imputes that he saw the characters of the five elements on the tortoise's back.

It is not impossible that Chinese writing has been introduced from ancient Mesopotamia, a theory vigorously advocated by M. Terrien de Lacouperie, rejected by many, but, after all, sufficiently probable to deserve serious consideration, for we cannot deny that many Chinese symbols exhibit a remarkable similarity to the ideograms of both ancient Babylonia and ancient Egypt, and remembering the fact that Chinese bottles have been discovered in Egyptian tombs and also in Asia minor, we cannot help granting that in prehistoric days there must have been more trade, and more travel, and a greater exchange of thought than is generally assumed.

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and sufficiently different to be easily deciphered. The *Standard Dictionary*, II, p. 1780, contains an illustration of the string alphabet.

[6] Myers's *Chinese Reader's Manual*, p. 228, I, No. 758.

We here reproduce from Garrick Mallery's work on *Picture Writing of the American Indians,*[1] a table of symbols which shows the cuneiform signs in three forms; pictorial, hieratic, and cursive, the Chinese and the Egyptian in parallel columns.

MALLERY'S TABLE.

A Comparison of the Cuneiform, Chinese, and Egyptian Systems of Writing.

The words omitted in the Chinese column of Mr. Mallery's

[1] *Ann. Rep. of the B. of Ethn.*, 1888-9, p. 675. Mr. Mallery does not state the source from which it is taken. It may be from W. St. Chad, Boscawen, or M. T. Lacouperie.

table (God, ear, home) are not less remarkable instances than the others.

The word "God" is more similar than it appears if we were to judge merely from its external shape. In cuneiform writing as well as in Egyptian it is a star, and the Chinese word *shih* (示) shows a horizontal dash and underneath three perpendicular wave lines. This seems very different from the Babylonian and Egyptian conceptions, but the Chinese character is explained to mean "light from the sky" or "celestial manifestation," the dash on top meaning "the heavens," and the three vertical lines depict the emanations in the form of rays.

The character for "ear," in its present form 耳 (*'rh*), might very well have originated from the Babylonian. The same is true of the Chinese character that denotes "field," or "farm land," which may very well be used in the sense of "homestead." The character *t'ien* (田) is in principle the same as the pictorial Babylonian and the hieroglyphic Egyptian.

Further, we have to add theat the Chinese word meaning "corpse" is explained as "body lying" and thus resembles the Egyptian word for "mummy" which in different senses is represented either as a standing or a lying mummy.

We have to correct a mistake in Mr. Mallery's table; the word "half" in Chinese is not a cross, but either half a tree or the ideogram "cow" combined with the character "division." A cross means "completion" and the complete number of our fingers, viz. "ten."

Whether or not the theory of Lacouperie be tenable, one thing is sure, that all three systems of writing, the Babylonian, the Egyptian, and the Chinese, have begun with pictorial representations of the objects which, according to circumstances, were conventionalised in different ways.

The writing material always influences the character of a script. Thus, after the invention of brush and paper, the method of writing down from top to bottom was naturally retained, but the script acquired that peculiar picturesque character of brush dashes which it still possesses.

The hair brush is called *mao-pi*, or simply *pi* (bamboo pencil),* and tradition states that General Meng T'ien was the inventor of writing with a brush,—a statement which is not impossible but

PICTORIAL WRITING CONVENTIONALISED.*

strange, for he was the most faithful servant of Shih Hwang Tî, the great hater of ancient literature, who on capital punishment ordered all the ancient books burned. Shih Hwang was a warlike emperor who ruled from 259 until 210 B. C., and for the first time (in 222 B. C.) united the entire Chinese empire under one scepter. He is the same who erected the great wall, so expensive and at the same time so useless, and General Meng T'ien was in command of the laborers. When the Emperor died, General Meng T'ien is said to have committed suicide.[5]

We here reproduce a list of ornamental Chinese characters which are commonly, and without doubt rightly, assumed to represent the most ancient forms of Chinese writing with a brush.


Boundary (口)


To wrap (包)


To revolve (回)


Mountain (山)

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* Reproduced from Williams's *Middle Kingdom*.

* The character 筆 *pi* consists of the radical "bamboo" and the word "brush" or "stylus."

[5] See Myers, *loc. cit.*, Nos. 597 and 497.


Water (水)


River (川)


Rain


Rain (later character) 雨


Earth (土)


Elephant, Idea (象)


Bird (鳥)


Island (州)


Wings (羽)


Wheel, Carriage (車)


Field (田)


Boundary (畺)


Grass


Grass 艸


Boy, Child (子)


Constellation (星)


Star (星)


Thread


Thread (another form) 糸


Wheat (麥)


Tree (木)


Wood (林)


Forest (森)


One-half (half a tree) (片)


Fruit (果)


Sun (日)


Moon (月)


Bright (Sun and Moon)


Bright (Moon shining in window)

明


Evening (夕)


Many (多)


Ear (耳)


Heart (心)


Flesh (肉)


Mouth (口)


Teeth


Teeth (later form)

齒


Muscle (力)


Infant, Feeble (幺)


Weak (infant muscle) (幼)


Male (muscle working in field) (男)


Complete, ten (十)


Middle (中)


Above (上)


Below (下)


Gate (門)


Between (間)


Divide, (八) Eight


To cut (分)


Crooked (亞)


Hatred (Crookedness of heart) (惡)


Cow (牛)


Half (Cow divided) (半)


Horns*


Sheep (羊)


Justice (my sheep) (義)


Beauty (large sheep) (美)


Man (人)


Humaneness (仁)


Compare


Compare

比


Invert, change (匕)


Conversion (化)


Looking backward, To flee before enemy (North) (北)


Many†


Multitude (衆)

Most of the symbols of the list explain themselves. A "boundary" is a simple line of enclosure. "Revolve" is a curve. The meaning of the signs "to wrap," "mountain," "water," "river," "rain," "horns," "grass," "child," "constellation" or "star," "thread," "wheat," "tree," "fruit," "sun," "moon," is obvious enough. The symbols "elephant," "bird," "heart" require more imagination; but

* This character does not exist in modern Chinese.
† Not used in modern Chinese.

the original picture is still recognisable in them. The word "flesh" is meant as a slice of meat. "Mouth," "teeth," "eye," are also intended to depict the objects. The word "muscle" represents the upper arm, and in connection with the word "weak" which originally means also "infant," it denotes "lack of strength." A character consisting of two lines, representing two pieces cut off, means "to divide." Later the character "knife," as the instrument by which the division is to be made, was added. Crooked roads mean "crooked" or "evil," and in combination with the word "heart" we have the word "hatred." In the symbol "cow" the horns form the most prominent part, the body being reduced to a mere cross. The symbol "cow" combined with the symbol "division" means "half." The picture of a sheep shows the symbol "horns" on the top while the rest is scarcely recognisable. The symbol "sheep" in combination with the symbol "mine" represents the character "justice," because the ancient Chinese were shepherds, and their main quarrels in courts of justice were disputes about the ownership of sheep; and their idea of beauty was expressed by "a sheep" that is "great." The symbol "middle" is easily understood and so are the symbols "below" and "above." The character "gate" is a picture of a double doorway, and the character "between" shows a mark between the two posts of the gate. The character "sun" or "moon" and a picture of a "window" means "bright," for if the moon shines into the window it denotes "brightness," and "sun and moon" in their combination mean the same, viz., the best light there is in the world. The ideogram "moon," if written in a special way, is read "evening," and if "moon" is repeated it means "many evenings," or simply "many." The earth is represented by a horizontal line on which a cross stands, implying that the soil of the earth is stable; it is the place on which to take a stand. Two trees mean "wood," three trees "forest." If the tree is cut in two, it originally denotes "one-half," later on it acquired the meaning "part or parcel," and finally "piece."

The outline map of a field means "field" or "farm," and lines limiting two fields mean "frontier" or "boundary."

If the character "man," of which only the legs are left, has the

symbol "two" attached to it, it means the relation which obtains between two or several people, viz., "humanity," "humaneness," or "kindness." One man or two men turned the other way means "to compare." A man upside down means "to invert," "to change." One man in his normal position, and the other upside down acquires the sense of "transformation" or "conversion." One man in a normal position and another man looking the other way means "north," for the Chinese determine directions by looking south; hence, to look backward means "north." The symbol consisting of three men means "many." To this symbol is frequently attached the character "eye," and thereby it acquires the meaning "many as a unit," i. e., "a multitude."

A pretty instance of Chinese word formation is the word *shu* (書), which means "book" or "treatise," and is composed of the characters "brush" and "speak," the idea being that it is a thing in which "the brush speaks."

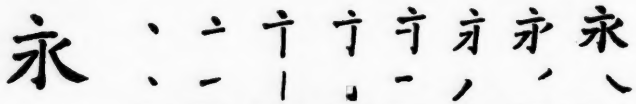
There are several styles of Chinese script (*shu*), and we here reproduce from Professor Williams's *Middle Kingdom* (Vol. II, p. 594) a table which shows at a glance their similarities and differences. The most old-fashioned style is called "the seal script," or, after the name of the inventor, *Chuen Shu.* The second is the official style, or *Lieh Shu,* used for engrossing documents and commonly considered the most elegant form of writing. The third is called the pattern or normal style (*Kiai Shu*); because it preserves most clearly the essential character of Chinese writing. The fourth is a shorthand and demotic style called cursive script or *Hing*[10] *Shu,* much used in practical life. It is the most difficult for foreigners to read, as many lines are run together, thus obliterating the distinctness of the original character. The fifth style is called the grass script or *Tsao Shu.* It is almost an approach to the easy hand of the Japanese, and its name may be translated "fancy style." Under the Sung dynasty a new style was adopted which is practically the same as the normal style, only showing more regularity, and it is

[10] *Hing* means "to walk," "to run"; and as a noun the same character means "element."

SIX DIFFERENT STYLES OF CHINESE WRITING.
(Reproduced from Williams's *Middle Kingdom.*)

commonly called *Sung Shu* which has become the pattern of modern Chinese print.

The writing of Chinese requires eight different kinds of dashes, and the word *yung* (永), "eternal," contains all of them. This significant character accordingly has become the typical word with which Chinese scholars start their calligraphic lessons.



THE ELEMENTS OF CHINESE SCRIPT.

The little mark like a fat upward comma is called *dot*. Among the lines we have a *horizontal* and a *perpendicular*. Further there is a *hook*, which latter is added to the perpendicular by joining to its lower end a dot line. A *dash* is a short horizontal line. A tapering line downward is called a *sweep*, upward a *spike*, and a smaller sweep in the shape of a big downward comma, *stroke*. A crooked line is called a *curve*.

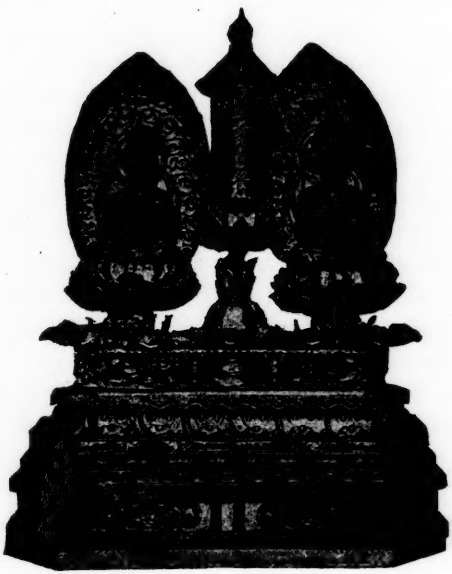
STOCK PHRASES AND STAPLE THOUGHTS.

The Chinese are in the habit of propounding their favorite notions and beliefs in enumerations. They are so accustomed to the mathematical conception of Yang and Yin that they would agree with Pythagoras who finds in number the explanation of the world.

The Chinese speak of the *liang i*, i. e., the two primary forms representing the positive and negative principles. Further they speak of the two great luminaries, sun and moon; the two divinities presiding over war and peace, the two emperors of antiquity, the two first dynasties, viz., the Hsia and Yin; and the two venerable men that hailed the advent of the Chow dynasty, etc.

The number "three" plays an important part in Chinese enumerations. There are three systems of religion authorised by the government: Confucianism, or the system of the Literati (儒); Bud-

dhism, or the system of Shakya Muni (釋); Taoism or the system of Lao Tze (道). There are three kinds of heavenly light: of the sun, the moon, and the stars. In Chinese ethics there are three forms of obedience: of a subject toward his sovereign, of the son toward his father, of a wife toward her husband. There are three mental qualities (性) of a student: application (讀), memory (記), understanding (悟). There are the three gems worshipped by Buddhists, the Buddha, the Dharma, and the Sangha. There are



THE THREE GEMS OF BUDDHISM.

three pure ones or precious ones worshipped in the Taoist temples, probably in imitation of the Buddhist trinity. There are three ceremonial rituals; one in worshipping heavenly spirits, another in worshipping spirits of the earth, and the third one in worshipping the spirits of ancestors. There are three sacrificial animals: the ox, the goat, the pig. There are three holy men: Yao, Shun, and Yü. There are three auspicious constellations: the constellation of happiness, the constellation of emolument, and the constellation of

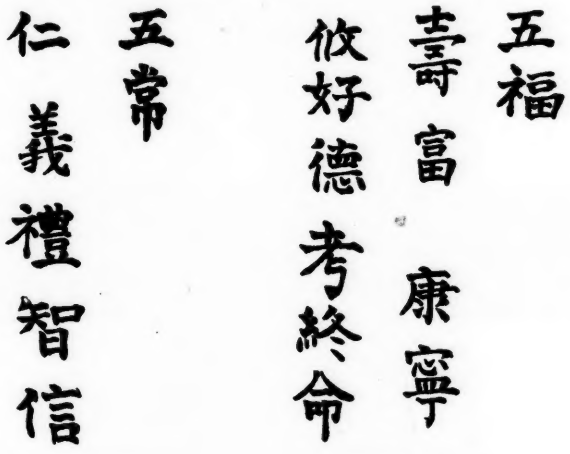
longevity. There are three kinds of abundance that is desirable: abundance of good fortune, abundance of years, abundance of sons. There are three powers (三才) of nature: heaven (天), earth (地), man (人). There are three regions of existence, the heavens, the earth and the waters. There are three degrees of kinship. Further there are three penal sentences: the death penalty, corporeal punishment, and imprisonment. There are three tribunals of justice: the board of punishments, the court of judicature or appellate court, and the censorate or supreme court. There are three forms of taxation: land taxation, a service of twenty days labor each year, and tithes of the produce. There are three great rivers: the Yellow River, the Loh, and the I. There are three great river defiles: Kwang Tung, the Valley of the Yang Tse Kiang, and the defiles of the Si Ling on the Yellow River. There are three primordial sovereigns: Fuh Hi, Shen Nung, and Hwang Ti. In addition there are innumerable sets of three in the literature of the Confucianists, the Buddhists, the Taoists, and also in history.

The number "four" is not less frequent. We have four quadrants and four divisions of the heavens; the East is the division of the azure dragon, the North of the somber warrior, the South of the vermillion bird, and the West of the white tiger. There are four supernatural creatures considered as endowed with spirituality: *lin* (麟) or unicorn, *feng* (鳳) or phœnix, *kwei* (龜) or tortoise, and *lung* (龍) or dragon. The scholar possesses four treasures (寶): ink (墨), paper (紙), brush (筆), and ink slab (砚).[11] There are four figures which originate by combining the two primordial essences in groups of two, the great *yang*, the small *yang*, the great *yin* and the small *yin*. There are four cardinal points and four members of the human frame.

Instances of the number "five" are above all the five blessings (五福): longevity (壽), riches (富), peacefulness (康) and serenity (寧), the love of virtue (攸好德), and a happy consummation of life (考終命). There are five eternal ideals (常): humaneness

[11] The Chinese have no ink stand but use a slab upon which they rub their ink, taking it as does a painter from a palette.

(仁), uprightness (義), propriety (禮), insight (智), and faithfulness (信). There are five elements (五行): water, fire, wood, metal, earth. There are five cardinal relations among mankind: between sovereign and subject (君臣), between father and son (父子), between elder brother and younger brother (兄弟), between husband and wife (夫婦), between friend and friend (朋友). There are five genii: of spring, of summer, of mid-year, of autumn, and of winter. There are five beasts used for offerings: the ox, the goat, the pig, the dog, the fowl. There are five colors: black, red, azure, white, yellow. There are five classes of spiritual beings:



THE FIVE IDEALS. THE FIVE BLESSINGS.

ghosts or disembodied human spirits, spiritual men, immortalised beings living in this world, deified spirits who have departed from the material world and live in the islands of the blest, and the celestial gods who enjoy perpetual life in heaven, There are five planets: Venus, Jupiter, Mercury, Mars, and Saturn. Further the Buddhists enumerate five attributes of existence: form, perception, consciousness, action, and knowledge. There are five degrees of feudal rank, five tastes, five notes of harmony in music, five sacred mountains, five kinds of charioteering, five colors of clouds, five ancient emperors, five imperial courts, five kinds of mourning, etc., etc.

The characters which stand for the five blessings, and also the five eternal ideals, are naturally the most popular symbols all over

五蝠

THE FIVE BATS.

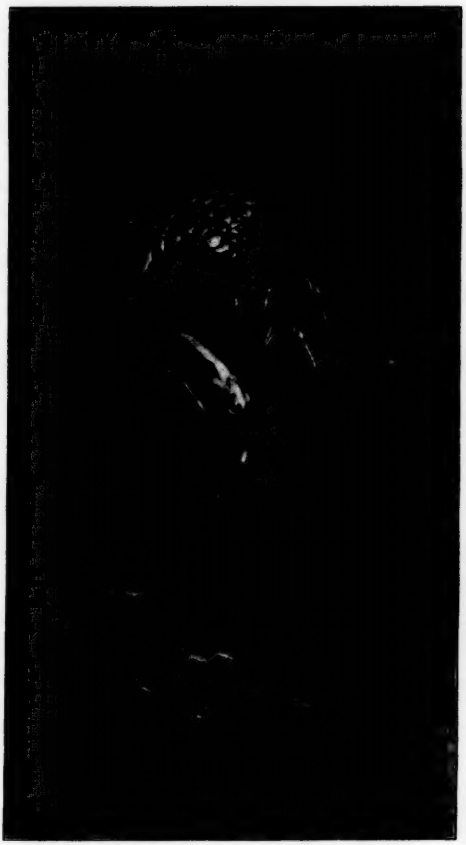
(After a Tibetan picture.)

THE LONGEVITY GARMENT.*

China. They are used for congratulations and are inscribed upon wall pendants as ornaments. Among them the characters "longev-

* Reproduced from Professor De Groot's *Religious Systems of China*, page 60.

ity" and "blessing" are most used of all. They appear upon the decanters of convivial meetings; they are written on the bottom of tea cups; they are wrought into artistic forms of furniture; they



CRANE AND TORTOISE.*
Symbols of long life. (Bronze candlestick.)

are used for buckles, on pins, on dresses, and as ornaments of every description.

* The tortoise drags along the moss that has grown on its back.

Blessing is called *fu* in Chinese, which is an exact homophone of *fu* meaning "bat," and so the five blessings, *wu fu,* are frequently represented by five bats.

The meaning of the symbol "longevity" is not limited to the secular meaning of long life in this world, but is endowed with

THE LONGEVITY SYMBOL IN DIFFERENT STYLES.

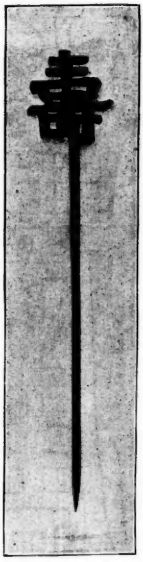
religious signification verging on the idea of immortality among Western peoples.

Ancient traditions tell us that Si Wang Mu, the Royal Mother of the West, who lives in the Kwun Lun Mountains, possesses a

peach-tree bearing fruit but once in three thousand years. From the peaches of this tree the elixir of life can be distilled, and this is the reason why the peach symbolises longevity. Other symbols of longevity are the pine-tree, the crane, and the tortoise.*

Of enumerations in sets of six we will only mention the six accomplishments: intelligence, humanity, holiness, sincerity, moderation (keeping the middle path), and benignity; further the six

THE CHARACTER 業 ON CUFF BUTTON.



LONGEVITY PIN.

forms of writing: the seal character, the ancient official style, the normal style, the cursive style, the grass style, and the printer's style.

There are fewer enumerations of seven than might be expected. We mention the seven sages in the bamboo grove, the seven precious things (Sapta Ratna) of the Buddhists, the seven primary

* For special reference see De Groot's *Religious Systems of China,* pp. 56-57.

notes of music, the seven stars of Ursa Major commonly called "the dipper," the seven apertures of the head: ears, eyes, nostrils, and

CANDELABRUM WITH "LONGEVITY" AND "HAPPINESS" SYMBOLS.

"LONGEVITY" DECANTER.

"LONGEVITY" CHOPSTICK HOLDER.

mouth; the seven luminaries: sun, moon, and the five planets; the seven emotions: joy, anger, grief, fear, love, hatred, desire.

The most important set of eight is the eight *kwa* or trigrams.

The figure "nine" is represented as the nine heavens, situated, one in the center, and the eight remaining ones in the eight divisions of the compass. There are further nine degrees of official rank, and nine divisions of the Great Plan, an ancient Chinese state document.

There are ten canonical books: the Book of Changes, the Book of History, the Book of Odes, the Record of Rites, the Ritual of the Chow Dynasty, the Decorum Ritual, the Annals of Confucius, the Three Commentaries, the Conversations of Confucius (*Lun Yü*),

BUCKLE WITH CHARACTERS "LONGEVITY" AND "BLESSING."

and the Book of Filial Piety. There are ten commandments and ten heinous offences.

Of twelve we have the twelve animals of the duodenary cycle called rat, ox, tiger, hare, dragon, serpent, horse, goat, monkey, cock, dog, and pig. They preside, each one over a special hour of the day and the night and are supposed to exercise an influence peculiar to the character of the several animals. There are further twelve months, corresponding to the twelve divisions of the ecliptic, and the Buddhists speak of the twelve Nidanas or links in the chain of causation.

The figure "twenty-eight" is important as the number of days of a lunar month. Accordingly, the heavens are divided into twenty-eight constellations or stellar mansions, and it is noteworthy that four days in the twenty-eight, corresponding to the Christian Sunday, have been signified as resting-days and are denoted by the character *mi* (宿 日) which has been traced to the Persian Mithra and proves that, in remote antiquity, Mithraism must have exercised an influence upon Chinese habits.[12]

NORMAL STYLE.

GRASS STYLE.

A NEW YEAR'S CARD.*

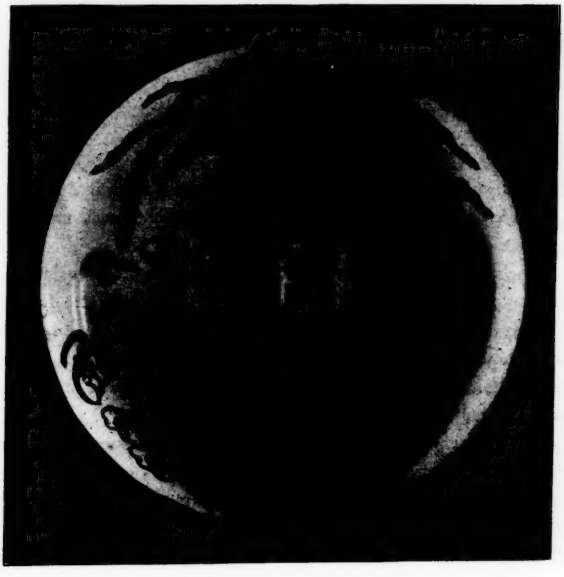
THE CHARACTER "BLESSING."

These enumerations are not accidental and indifferent notions, but form the staple thoughts of Chinese ethics. They have become fundamental principles of Chinese morality and constitute the backbone of the convictions of every half-way educated inhabitant of

[12] See Mr. A. Wylie's article on the subject in the *Chinese Recorder*, Foo Chow, June and July numbers, 1871.

* The deity Wen Ch'ang points upward, indicating that all blessings come from heaven.

China. Whatever their station in life may be, all Chinese people know these ideas, they bear them in mind and allow their lives to be determined by the conception of the five eternal ideals, the five virtues, the five blessings, etc. They recognise in nature the fundamental contrast of Yang and Yin as having originated from the great origin and believe that the moral world of social conditions



CHINESE SAUCER WITH PHOENIX AND DRAGON.
The centre contains the character *fu* "blessing."

is governed by the same law. Their highest ambition is to fulfil all the demands of *hsiao,* i. e., "filial piety." Scholarship is highly respected, and even the lower classes are punctilious in the observance of all rules of propriety.

EDITOR.

CRITICISMS AND DISCUSSIONS.

SUBSTITUTION IN LOGIC.

To the Editor of The Monist.

In the *Journal of Philosophy, Psychology, and Scientific Methods* (Vol. I, p. 541) Professor James, the eminent Harvard psychologist, makes the following positive assertion:

"In Taine's brilliant book on 'Intelligence,' substitution was for the first time named as a cardinal logical function, though of course the facts had always been familiar enough."

Now I should like to put this question to your readers: Are not the statements contained in the following sentences what may fairly be called "the naming of substitution as a cardinal logical function"?

"Every conclusion may be regarded as a statement substituted for either of its premises, the substitution being justified by the other premises. Nothing is relevant to the other premises except what is requisite to justify this substitution. Every substitution of one proposition for another must consist in the substitution of term for term. Such substitution can be justified only so far as the first term represents what is represented by the second."

These sentences occur in a pamphlet entitled *Three Papers on Logis,* by C. S. Peirce, which was, as I am informed, widely distributed in the summer of 1867. The same papers were also printed early in 1868 in Vol. VII of the *Proceedings of the American Academy of Arts and Sciences,* pp. 250 to 298, as having been presented to that society in March, April, and May, 1867. Taine's work *De l'intelligence* is dated, in its preface, December, 1869.

Since Ockham, Hobbes, and Leibnitz, who all regarded mind from the same general standpoint as Taine, like him, spoke of thoughts as signs *substituted* for things and for other signs, the question as to whether or not any great step in logic was made in thus regarding substitution as *the* "cardinal function," is one of too large a scope to be here entered upon; but I subjoin a few more sentences from the papers referred to to show that the conception was not left undeveloped by Mr. Peirce.

"The objects of the understanding, considered as representations, are symbols, that is, signs that are at least potentially general. But the rules of logic hold good of any symbols, of those that are written or spoken, as well as of those that are thought."

"Symbols which directly determine only their imputed qualities are but sums of marks, or *terms;*

"Symbols which further independently determine their objects by means of other term or terms, and thus, expressing their own objective validity, become capable of truth or falsehood, are *propositions;*

"Symbols which still further independently determine their interpretants, and thus the minds to which they appeal, by premising a proposition or propositions which such a mind is to admit, are *arguments.*"

Mr. Peirce seems to have regarded it as *essential* to an argument that it should appeal to the interpreting mind to judge of it independently. Thus, he says, "an argument will here denote a body of premises considered as such," for it must distinctly show what the interpretation of the premises is expected to be, yet, in so far as the argument is a rational appeal, the conclusion which embodies this interpretation is not put as an *assertion,* but is only formulated and submitted to the interpreting mind to judge.

Mr. Peirce has always been careful to exclude from logic, matter that he considers psychological, and therefore it is not surprising that he did not explain to what mind the appeal of the argument is addressed when one reasons with oneself. But it would seem to be plain from the above extracts, and is rendered perfectly clear in the papers referred to, that he not only considered all logical thought as an operation upon symbols consisting in substitution, but that he undertook to demonstrate this and to show *how* the same is true.

I may add that Peirce does not in the papers referred to say that substitution, which he makes the one hinge of all reasoning, is an *indecomposable* operation, and that in Baldwin's *Dictionary of Philosophy and Psychology,* Article "Symbolic Logic," he shows that no operation of substitution is valid unless the operations of insertion and subsequent omission into which it can be resolved are both valid.

FRANCIS C. RUSSELL.

THE PLACE OF MATHEMATICS IN EDUCATION.

The present rector of the University of Munich, Professor Ferdinand Lindemann, has devoted his official rectorate lecture to the important subject of the significance of mathematics in the higher schools. At present the curriculum of the German gymnasia is based upon the principle that education consists first of all in a knowledge of classical philology and history. Pro-

fessor Lindemann is fully convinced that a knowledge of Greek thought is indispensable for any educated man. But we must not forget that the leading philosopher of ancient Greece wrote over his school the significant words

μηδεὶς ἀγεωμέτρητος εἰσίτω,

and Melanchthon quotes this famous maxim of Plato in his preface to the Latin edition of Euclid (Basel, 1537). How different is the classical conception from the modern treatment which mathematics receives! It is now considered dry, monotonous and tedious, and the mathematician is generally eschewed, being stigmatised by the saying, *mathematicus non est collega*, "the mathematician is unsocial."

In order to point out the value of carefully elaborated mathematical exercises, Professor Lindemann quotes Helmholtz as saying, "In my judgment, a true comprehension of mathematics is attained by working out mathematical propositions on paper and accurately revising each statement that is given. When one simply thinks out something in his mind, there is always a possibility of error, of disregarding some important term which he will never notice until he writes it down. I consider this most excellent practice in order to arrive at really clear logical thought, and to understand mathematics. For if students do not work out their mathematics and write it down they will never positively understand it."

How little consideration is given mathematics among leading experts on ancient and classical times, appears from Mommsen's famous dictum to which he gave utterance in his speech before the Royal Academy of Sciences, Berlin, in 1884. "We shall, furthermore, continue to call the ideal culture of mankind in good Latin, humanity; and the man who would in time replace Homer by the doctrines of conic sections, in good Greek, banausic." In answer, Professor Lindemann says, "Mommsen misunderstands the facts. We agree with him perfectly that Greek reflection and Roman thought continue to sway even to-day, consciously and unconsciously, our humanistic culture, and we too designate the ideal of human civilisation as humanism, but this ideal comprehends not only the development of art, politics, literature and history, but of the exact sciences as well. The innumerable theorems of conic sections certainly consitute mathematics as little as the recitation of Homeric songs can pass for classical scholarship. But if elements of the theory of conic sections have lately been introduced into the program of our higher schools, this step has an ulterior purpose. The treatment of conic sections in methods of analytical geometry familiarises the student with an instance of the general laws of interdependence; it is the general idea of functions as here introduced in geometrical form, which has directed and controlled the development of mathematics during these latter centuries, and upon which rest the great discoveries of Newton and Leibnitz.

Professor Lindemann further calls attention to the application of mathematics in technical occupations and sciences, especially in astronomy, physics, and of late even in chemistry. He points out that the only road to success in the sciences in modern times passes through the gate of higher mathematics, and mentions in connection therewith such names as Kepler, Newton, Comte, Mayer, Helmholtz, Clifford, Hertz, Mach, Pearson, Poincaré, and Herbart.

Wilamovitz has made progress in his method of teaching the classics by introducing bits of Euclid in his textbooks; but, argues Professor Lindemann, will a classical philologist be able to explain the subject-matter of the seemingly most simple statements of mathematics referring to definitions, axioms, etc.? Do the philologists have an idea of the vast literature which of late has grown out of the discussion of these simple propositions, since Bolyai, Lobatchevsky, and Gauss? There are quite a number of mathematical textbooks which still retain the false ground that it is possible to improve upon Euclid, and in spite of the discussions and lectures held at almost every University on the subject, they continue to offer definitions and even demonstrations which long since have been shown to be insufficient.

Professor Lindemann declares that mathematical instruction in gymnasia, corresponding in America to undergraduate courses in college and university, should not cover all the details of mathematical branches, but should be so arranged as to enable the student to gain a proper comprehension of the grand edifice of mathematics and its solid foundation. Teachers of mathematics should be equipped to satisfy these conditions and should be familiar with the methods by which the science of mathematics has been worked out. They should know its history, not only in general, but some of its main problems; for instance, how mankind happened to be interested in the trisection of the angle and the squaring of the circle. He should have a command of the basic ideas of analytic mechanics; should at least have become acquainted with the exact execution of certain experiments, such as the motion of the pendulum; and should also have clear ideas concerning the field of applied mathematics and its significance in practical life. It is these aims that the leading mathematicians have had in mind since the beginning of the last century.

THE SLAV INVASION.

MR. FRANK JULIAN WARNE'S VIEW OF THE SITUATION.

While other nations are waging wars, causing loss of life, property, and money, the United States is passing through industrial struggles which are not less expensive. The anthracite strike commission estimated the loss of the last strike at one hundred million dollars. Mr. Frank Julian Warne,

Ph. D., who is correspondent for the *Philadelphia Ledger* and contributor to *The Outlook*, and who was in the Pennsylvania coal fields in 1900 and 1902, has published his views of this great struggle, and it may be surprising to many that he regards the industrial phase of the strike as a mere incident and insists that it is above all a struggle between the Slavs and the Saxons. He has published his views in a book entitled *The Slav Invasion and the Mine Workers, a Study in Immigration,* (J. B. Lippincott Company, Philadelphia. $1.00 net,) and suggests at the end of the book the advisability of the amendment of our immigration laws. His view may be onesided but it contains much valuable information, presented by an impartial observer. It is characterised in the Preface as follows:

"This book shows how the competition of the so-called Slav races, including the Italian, for the places in and about the hard-coal mines of the English-speaking mine-workers—the Irish, English, Welsh, Germans, Scotch, etc.—has resulted in a conflict between these two distinct groups for industrial supremacy in hard-coal mining, and how this is forcing the English-speaking nationalities out of this industry and out of that section. The strikes of 1900 and 1902 were mere surface indications of the wide-spread industrial unrest which naturally accompanies this struggle; they should be regarded as mere episodes in this great conflict of races."

Mr. Warne has great faith in the United Mine Workers of America, and he believes that though the Union may pass away, it has accomplished a work that otherwise might have seriously endangered the healthy development of the nation. The United States has shown an enormous power of assimilation, but the Slavs are so different from the Teutons, who really give character to our nation, that the usual methods proved insufficient. Mr. Warne says:

"The power of assimilation in Northeastern Pennsylvania is being weakened by the heavy task thrust upon it, and unless aid comes from other sources it may be questioned whether American ideals and institutions are to be equal to the work of making the Slav immigrant into an American citizen. The one bright ray of hope lighting up the uncertain future is shed from the activity in the coal-fields of the United Mine Workers of America. With this organisation, to a much greater degree than most of us realise, rests the solution of many of the problems presented in the hard-coal producing communities. Its power of uniting the mine-workers of all nationalities and creeds and tongues—of bringing together the Slav and the English-speaking employees on the common ground of industrial self-interest—has only recently been demonstrated. Through this it is breaking down the strong racial ties which until its entrance into the region kept the two groups apart. In brief, this organisation is socialising the heterogeneous mass."

There are three causes which have primarily contributed to the ultimate

failure of the trades union movement in the anthracite coal region. They are: (1) the inability to control all the workers in the three several fields; (2) the railway ownership of the mines; and (3) the "Molly Maguires."

The first two causes are sufficiently well known and stand in need of no further comment. The "Molly Maguires" were a secret oath-bound organisation which flourished in the regions from 1866 to 1876. Their history is described by Mr. Warne as follows:

"The 'Molly Maguires' were principally Irish immigrants, who brought the society with them from Ireland, where it had been formed as the Ancient Order of Hibernians, under Robert Emmet, for the purpose of freeing their native land from the British control. None but Catholics were eligible to membership, and, despite the opposition of the Catholic Church and its priests in the anthracite region, the society continued in existence nearly ten years with the worst possible elements opposed to law and order in control. Its secret meetings, which planned murder and incendiarism, were conducted with solemn religious rites, and its vengeance seemed to be directed mainly against mine superintendents and bosses. A number of murders of such officials was traced to the society, but in every case alibis would be sworn to in the trial by other members of the society, and convictions were rare. So daring did they become, and so atrocious were the crimes committed, that detectives were employed to ferret out the criminals. One of these was John McParlan, an Irishman and a Catholic, who in 1873 succeeded in becoming a member of the society under the name of James McKenna. He played his part so well that he continued a member for three years before his real purpose was discovered and he was forced to flee. He had gained the confidence of the leaders, however, and had become secretary of the Shenandoah branch of the society. The evidence of the operations of the society he was thus able to furnish, led to the arrest of seventy members. With his mass of undisputed testimony, and through some of the prisoners turning State's evidence, twelve members of the society were convicted of murder in the first degree, four of murder in the second degree, four of being accessory to murder, and six of perjury."

Mr. Warne fully appreciates the work of the United Mine Workers of America in breaking down the inherited sources of separation and binding the heretofore antagonistic groups and races into a new relation:

"The racial and religious and social forces which heretofore tended to divide the mine-workers into innumerable groups antagonistic one to the other are being bridged over by the much more powerful force of industrial self-interest."

Mr. Warne describes the meeting which was called by President Roosevelt on October 1, 1902, in which the miners were represented as well as the operators. While Mr. Mitchell disclaimed the responsibility for the terrible

state of affairs and suggested that the questions in dispute between the mine-workers and the operators be submitted to a tribunal to be appointed by the President of the United States, Mr. Baer accused the unions of interference with their competitors, the "scab" element. He said:

"There are from fifteen to twenty thousand men at work mining and preparing coal. They are abused, assaulted, injured, and maltreated by the United Mine Workers. They can only work under the protection of armed guards. Thousands of other workmen are deterred from working by the intimidation, violence, and crimes inaugurated by the United Mine Workers, over whom John Mitchell, whom you invited to meet you, is chief. I need not picture the daily crimes committed by the members of this organisation."

In Mr. Warne's opinion the danger of further trouble will continue so long as the Slavic immigration is not stopped. At present, however, immigration continues, and the Slav element is increasing rapidly.

"In politics the Slavs are already a factor that must be reckoned with. They are becoming naturalised in an ever-increasing number. In Schuylkill County they are rushing into the naturalisation courts at the rate of sixty a month."

Yet, while Mr. Warne points out the danger and the trouble which is still in sight, he is not blind to the fact that the final solution of the problem must come through the education of the Slavs, for he says:

"Yesterday the Slav was a pauper immigrant; to-day he is what the English, Welsh, Irish, and German miner was a quarter of a century ago—on the way to becoming an American citizen. What sort of a citizen he may be will depend upon the influences that are brought to bear upon him. It is too early to judge him finally; certainly he should not be judged too harshly, especially as he has shown himself adaptable. But we may not blink the fact that the Slav offers at present a problem of much complexity and danger."

"All children of Slav parentage—and the Slav races are very prolific—do not attend the parochial schools. Many of them are in regular attendance at the public schools, and in general they are diligent and painstaking students. Invariably one hears good reports of them from teachers and superintendents—in fact, not a few public school teachers report the Slav children to be more proficient and in many ways more progressive in their studies than children of the English-speaking races. Under the public school system many of the Slav children are being trained into good American citizens. This educational force is, perhaps, the one bright promise lighting up the uncertain future."

BOOK REVIEWS.

VORTRÄGE ÜBER DIE DESZEDENZTHEORIE. Gehalten an der Universität zu Freiburg im Breisgau von *August Weismann*. Zweite, verbesserte Auflage. 2 Vols. in 1. Jena: Gustav Fischer. 1904. Pp. xiii, 340; v, 344.

Professor Weismann's *Theory of Descent*, which is a carefully revised report of lectures actually delivered at the University of Freiburg i. B., is intended by its distinguished author to be a résumé of his life's work, and we are glad to notice that within a short time it has already reached the second edition. He calls it his *Hauptergebnisse*, the chief results of his labors, and it constitutes a condensed statement of his theory on heredity.

Professor Weismann was one of the first among the naturalists of Germany to indorse Darwin's views, for which he made a strong plea in his inaugural address in 1867; but he thought at the time that Darwin's theories could be enlarged and deepened, and so he worked out his own theory of selection, in which he insisted on the significance of the selection that takes place in the domain of germs. He may be accused of exaggerating the importance of this principle, and of one-sidedness in deriving from it all his explanations. But, he answers, one might as well accuse physicists of one-sidedness when they claim that the law of gravitation is possessed of universality. He says:

"In this application of the principle of selection to all stages of living units, lies the nucleus of my views. To this thought all these lectures lead, and I am convinced that it constitutes the import of this book. It will last even if everything else in the work should prove temporary." In another place he says: "In spite of many contradictions, I take the fundamental ideas of my views to be right, and among them are the propositions of the existence of the determining units of life called determinants, and their combination into ids. Upon the doctrine of determinants rests the theory of germinal selection; and, according to my conviction, without this, the great thought as to the guidance of the transformation process of the forms of life through selection, by discarding the unfit and by favoring the better adapted, will remain a mere torso, a tree without roots."

Whatever may be just in the objection of exaggeration and one-sidedness that is made to Professor Weismann's theory of germinal selection, even his adversaries must admit that he has done good work, and that his investigations have contributed considerably to the progress of our comprehension of the theory of evolution. If we consider all the replies that have been made to Weismann, and if we consider, too, the innumerable new facts brought to light in controversy, partly by himself and partly by his adversaries in their anxiety to refute him, we may fairly say, even from the standpoint of his severest opponents, that the impulse which he has given to science is invaluable.

Within the last two decades biological science has penetrated more deeply into the mysteries of life than ever before, and at this period, Weismann has been the moving spirit, eliciting new data and utilising everything to its best advantage. Naegeli proposed his theory of the idioplasm—that substance which determines the form of a being. Professor Weismann developed this idea by entering into details and showing that such idioplasms should not be sought (as Naegeli wanted) in the body of the whole cell, but in the nucleus which contained all the determinants for the structure of the organism, called by Weismann *Anlagesubstanz,* a word which has caused translators much trouble, and which we will briefly define as the substance which contains a disposition of the organism. Every cell contains its idioplasm which was discovered in a colorable substance, whence the terms chromatin and chromosome. Professor Weismann calls the idioplasm of the germ cell, germ plasm, and any complex of germ plasm which forms a biological unit he calls an "id." Further, chromosomes that contain several ids he calls "idants," the existence of which, although invisible on account of the smallness of the germs, Professor Weismann deems established on account of his observations of the salamander.

From Professor Roux's investigations in regard to the struggle of the parts, we became familiar with the existence of the germ plasm, which is, as it were, a special substance of heredity. Roux discovered it in the chromosome and traced its continuity through generations. We know now the potential immortality which single cells and germ cells possess in contrast to all higher forms of life. We have observed the mitotic division of the nucleus and the actions of the centersphere which constitutes that marvelous organ of division of the cell and allows us to look deeper into the unfathomable mystery of the minute and complicated details in the structure of living cells.

How much more advanced are our views now as to fecundation and the details of that two-fold process, propagation and amphimixis; that is, the mixture which takes place in the fusion of male and female germs. Further, we have new facts as to the phenomena of growth and the significant reduc-

tion of heredity, units of which according to Professor Weismann lead to an abandonment of Lamarck's principle of selection and point out that ultimately selection is a selection of germs.

Although the present work is a defence of Professor Weismann's theory of germinal selection, the nineteen lectures which it contains are by no means polemical. He has avoided all personal expostulations with his adversaries, and has limited himself to plain objective statements of differences. He has not burdened his book with all details of biological facts, because he intended it to be a book to be read, and not an encyclopedia for reference. In spite of his modest intentions, however, the work possesses the stately size of 684 pages, with numerable illustrations in the text, besides colored tables in the Appendix. It is not Weismannism, but an exposition of the theory of descent, which presents each link of the argument in a complete yet popular form from the standpoint of Weismann, who feels confident that if we have to explain the teleology of nature without falling back upon the assumption of teleological forces, his method is the only way to success.

P. C.

ADOLESCENCE: ITS PSYCHOLOGY AND ITS RELATIONS TO PHYSIOLOGY, ANTHROPOLOGY, SOCIOLOGY, SEX, CRIME, RELIGION, AND EDUCATION. By *G. Stanley Hall.* New York: Appleton & Co. 1904. 2 Vols. Pp. xx, 589, 784.

Dr. G. Stanley Hall, the President of Clark University, is rightly deemed one of the foremost authorities on psychology, and the present work in two stately octavo volumes deals with the practical problems of adolescence in its varsious aspects, always keeping in mind the need of the teacher, the educator, and also the parent. It is scarcely possible to exhaust this important book in one review, and we do not mean to attempt it here. We venture only to characterise its contents and thus allow our reader to form a judgement of his own. In one passage of the preface the author says:

"The book attempts a pretty full survey of pedagogic matter and method for the age treated, and also, to some extent, for earlier and later years. To motor education, grouped under four great divisions, and will-training, one of the longest chapters (III) is devoted. The last part of Chapter XV and Chapter XVI treats of the pedagogy of the English literature and language, history, drawing, normal and high schools, colleges and universities, and philosophy, and Chapter XII is devoted to that of nature and the sciences most commonly taught. Menstruation and the education of girls occupies two chapters (VII and XVII), hygiene, crime, and secret vice one each (IV, V, VI), social and religious training have each a chapter (XV and XIV, respectively), and the education of the heart is described not only in XI, but in XV, XII, and elsewhere."

The psychology underlying Hall's investigations will be treated in a forthcoming work which we may expect to be as thorough as his *Adolescence*, in Chapter X of which, however, he offers a statement of his psychological views. He takes decided stand against those psychologists of both the past and present time whose interest in man's fate after death almost obliterates the interest in man's soul in the past. In fact this is the main burden of Dr. Hall's message to the psychological world, that the genesis of the soul can teach us more than the vague speculations as to its ultimate destiny, and so he insists that his book "embodies a new idea of profound scientific and practical importance."

Dr. Hall's description of the nature of the soul is as follows:

"The psyche is a quantum and direction of vital energy, the processes of which most need exploration and description, ordering and directing. By looking inward, we see for the most part only the topmost twigs of the buried tree of mind. The real ego is a spark struck off from the central source of all being, freighted with meanings that, could we interpret them, would give us the salient facts of its development history. Its essence is its processes of becoming. It is not a fixed, abiding thing, but grew out of antecedent soul states as different from its present forms as protoplasm is from the mature body. It tends to vary constantly and to depart indefinitely from what it is at any given moment."

"The soul is a product of heredity. As such, it has been hammered, molded, shocked, and worked by the stern law of labor and suffering into its present crude form. It is covered with scars and wounds not yet healed. It is still in the rough, and patchworky, full of contradictions, although the most marvelous of all the products of nature. Where most educated and polished externally, it still has inner veins where barbaric and animal impulses are felt. Every individual soul is marked by limitations, defects, and arrests, often beside traits of marvelous beauty and virtue. None are complete, perfect, typical. Collective soul, however, is a sensorium of wondrous subtlety that reflects in its multipersonal facets most, perhaps all, that has been in the world."

As to the underlying philosophy of his methods, he says:

"It may be roughly characterised as in some sense a new and higher monism and an evolutionism more evolved, with a method which has already yielded some promising results hitherto unattained and a program of far more work yet to be done, which is little in harmony with the complacent sense of finality and completeness so often manifest. From this standpoint it becomes plain how gross have been the errors in both conceiving and practically training the soul, which are due to the inexpugnable and all-dominant interest in its future state and the insistent and, to our thinking, not only unscientific but almost abnormal aversion to consider its past. This geneto-

phobia pervades, consciously or often unconsciously, much of the best ancient and contemporary philosophical and theological thought, and is one of the greatest and most inveterate obstacles to a truly scientific psychology. The problem of the nature of the soul has also rarely, save in forms of materialism now generally discarded, been separated from that of a future life, has led to a horror of materialism that is almost misophobia, and has betrayed many able professors to take an attitude toward genetic psychology like that of Agassiz toward evolution."

It is interesting to read Dr. Hall's views on Christianity in its relation to psychology:

"Christianity has shown little interest in the past of the soul, save for that of its founder and in order to account for sin. Its emphasis on personal immortality gave the soul immense and unprecedented dignity, but focused attention and endeavor upon its future. Even the traducianism of Tertullian, who taught that the soul was in some sense hereditary and had a somatic continuity with previous generations back to Adam, found little vogue, helpful as it was in explaining the mystery of transmitted sin and guilt, and was twice condemned as a heresy, although Luther seems to have held it. Some form of creationism, or the view that at a certain age of the embryo a newly and miraculously made soul joined the body *ab extra*, has been the prevailing one. The soul of the natural man is tainted, corrupt, and children depraved perhaps totally at birth, and the supreme work of life is to save it from eternal woe."

"The ethical value of the idea of a future life of rewards and punishments has, of course, been incalculable. If it has brought in cosmo-heteronymous motives of morality unknown to the Stoics and disallowed by Kant; if it has sometimes engendered a transcendental selfishness that may become gross, and in neurotic ages, races, or persons, favored fears and anxieties that were hysterical; if formal, external, and even mechanical ways and means of salvation have often been relied on—all these things concern us here only as products and illustrations of the evils of a too exclusive interest in the soul's future, which is, in fact, still unknowable save to faith, and of excessive neglect of its past, which is really now increasingly accessible and which is proverbially the best means of judging of its future."

Psychologists know Dr. Hall as a strictly scientific and conservative man, and so it will be interesting to learn his views on the New Thought movement and all that is concerned with it. Here is a passage both of appreciation and criticism of the significance of the Society for Psychical Research, and it will be noticed that the professors alluded to are portrayed so minutely that no one can be in doubt about their identity:

"One striking example of the havoc which this lust to pierce the secrets of the future makes with science is seen in the English Psychic Research

Society. It has collected masses of precious and hitherto neglected borderland phenomena between waking and sleep, sanity and insanity, on trancoidal states, automatisms of body and mind, illusions, hypnotism, etc. But almost the sole interest of this large and cultured society in these data is what contribution they make to what its able leader calls the most insistent question of the human heart, If a man die, shall he live again? Is there a land of disembodied spirits, and can communication be established and demonstrated between them and us? Possession, apparitions, phantoms of the dead, messages from the ghost world, or transcendental as well as mundane telepathy, and in general an inductive demonstration of a survival of the soul after death, are thus the themes or conclusions, directly or indirectly, inspiring all this work. Now the folly and pathos of all this is that every fact and group of facts relied on point for their explanation directly and only to the past of the individual or the race and not to the future, to the ab- and sub- and not to the super-normal, or perhaps to the body even more than to the spirit. Greatly indebted as our guild is for facts, suggestive *apercus*, and new interests to these students, their service is, as I have elsewhere tried to point out in some detail, not unlike that of the alchemists who sought the elixir of life for chemistry, of astrologists in quest of the influence of the stars on human life for astronomy, and just as the desire to locate heaven and faith in planetary influences and modes of attaining physical immortality had to be cast out of these fields before science could really do its great work in them, so similar purgation must be made here.

"How profoundly contemporary psychologists and philosophers of the highest academic rank, even those who shrink from all such extreme conclusions, are influenced by this bias, consciously or unconsciously, in the deeper motivations of their work, its direction, methods, and conclusions, we see on every hand. One professor of great learning and acumen has been apparently almost unpivoted by the prolonged and acute study of the revelations of a noted trance medium, which he is convinced are from relatives in the spirit world. Another profound and acute leader of American metaphysical thought attains as his consummate conclusion the conviction of an eternal world of many monadic minds or selves, in a republic or city of God, the free members of which control the natural world and are the sources of all its law. The supreme fact in his world is 'the eternal reality of the individual.' Creation itself is not an event, but a symbol, and these personal spirits never fully and completely enter the real world, for they are out of time and of the chain of causality. Another of no less power and eminence makes the goal of philosophy the demonstration of an individuality deeper, more permanent, and real than that of persons as they appear to us, because knowledge and love are stronger than life, and so, if our nature is not a lie, the actuality of our dead friends transcends sense. Such instances might be

multiplied. The great majority of people, expert as well as lay, think and speak of soul in the future tense, and to very few does the word suggest any connotation with the past. Ask the very man on the street what he thinks of the soul, and he assumes that you speak of another life or of preparation for it."

THE SOCIALIZATION OF HUMANITY. A System of Monistic Philosophy. By *Charles Kendall Franklin*. Chicago: Charles H. Kerr & Company, 1904. Pp. x, 481.

Mr. Franklin says in the Preface:

"The object of this investigation is to trace physical, organic, and social phenomena to their sources in order to discover their laws, so that the subsequent expenditure of energy in nature, life, mind, and society may be determined for human welfare. It will necessitate reviewing all of the great concepts of the race, matter, motion, life, mind, and society,—and will result in an attempt at a complete orientation of the race and the establishment of the principles which will lead to the democratisation and socialisation of humanity. The magnitude of the undertaking need not deter us, for it is by attempting the impossible that we accomplish what we are capable of."

The author attaches great significance to what naturalists would call uniformity, as it appears first of all in the phenomena of chemistry. He says:

"The spectrum analysis shows that all identical substances, not only here on earth, but in the heavenly bodies throughout the visible universe, are identical in composition. The law of definite proportions in chemistry shows that all identical chemical compounds are the same in composition. Whenever a substance is produced, it is but a repetition of all other substances of a like kind. Wherever a chemical compound is reproduced, it is a repetition of all identical compounds, but owing to external energies being different there are some slight variations."

While in plant life and in the animal kingdom the variations are greater than in the domain of chemistry, still we find there too the selfsame law of repetition which does seem to dominate all nature. Bearing in mind this law of repetition, Mr. Franklin discusses the origin of life; the physics of the senses and the intellect; the chemistry of the senses, the emotions and the will; animal mechanics; realism and idealism; naturalism versus supernaturalism, and the expenditure of energy controlled by mind. In Chapters 19 and 20 our author forestalls criticisms that might be made to his system, and in Chapter 21 offers his applications and conclusions.

His monism is expressed on page 237 in these words:

"All nature is one. We can interpret all nature in terms of our life, and our life in terms of nature; thus we are akin to everything and every-

thing is akin to us. This is monism. And nature, including everything, is due to the unversal process of the eternal adjustment and readjustment of the radiant and gravitant energies constituting the universe."

The most important application of his system lies in the domain of social ethics. Mr. Franklin says:

"At vast intervals of time in the history of the race there have occurred great epochs of improvement in civilisation with prophecies of a perfect existence yet to come. In the East, Brahminism was followed by Buddhism with a promise of Nirvana; in the West, Judaism was followed by Christianity with a promise of heaven. It is this perfect existence, dreamed of by the race since its beginning, the socialisation of man, that we enter upon to-day. And the step we take, whether it be large or small, is left to the world to judge."

DIE LEBENSWUNDER. Gemeinverständliche Studien über biologische Philosophie. Ergänzungsband zu dem Buche über die Welträthsel. By *Ernst Haeckel,* Professor in the University of Jena. Stuttgart: Alfred Kröner. 1904. Pp. xii, 567. Price, 9 marks.

THE WONDERS OF LIFE. A Popular Study of Biological Philosophy. Supplementary Volume to "The Riddle of the Universe." By *Ernst Haeckel.* Translated by *Joseph McCabe.* London: Watts & Co. 1904. Pp. xiv, 501. New York: Harper & Brothers. 1905. Pp.485. Price $1.50 net.

Our indefatigable Haeckel has published another book of 567 pages devoted to the fascinating subject of the miracle of life. Professor Haeckel had declared that his *Riddle of the Universe* should be his last writing, but having inquiries concerning many statements made in it, he feels that an answer is due his many admirers as to his position concerning the one and only miracle of this world, to the solution of which the science of biology is devoted. The biological studies of the present volume are intended as a popular treatment of the subject, and they make a fascinating writing indeed. They are treated in six parts and twenty chapters which, after the laudable practice of our ingenious author, are preceded by brief summaries so as to enable any one of his readers to look up those points in which he would be specially interested. The book abounds in tables and is supplied with a good index. The author would gladly have added illustrations which in some parts will be sadly missed by many readers, but he did not yield to the temptation of satisfying this natural craving, for fear that the book would become too expensive and be beyond the reach of the large masses for whose information it is intended. In every line of the book we feel the joy of work which has animated the strenuous Professor in all his literary labors, and it seems that even his adversaries will find it both profitable and pleasant reading.

Haeckel is so popular that Watts & Co., the English publishers of his *Riddle of the Universe* and *The Evolution of Life* have engaged Mr. Joseph McCabe to translate this new work under the title, *The Wonders of Life; a Popular Study of Biological Philosophy.* The book forms a stately volume of 500 pages and the translation is well done.

The American edition is published by Harper.

EUCLID'S PARALLEL POSTULATE: Its Nature, Validity, and Place in Geometrical Systems. By *John William Withers.* Chicago: The Open Court Publishing Company. 1905. Pp. vi, 192.

Mr. Withers, Principal of the Yeatman High School of St. Louis, Mo., has taken his Doctor's degree on the thesis "Euclid's Parallel Postulate," and its significance for other systems of hyperspace than is known to us in our tri-dimensional world. The book is scholarly and the arguments are sober. Dr. Withers begins with an historical exposition of his problem, relating the difficulties discovered in the parallel postulate and the several methods of disposing of it, one main result being the discovery and development of non-Euclidean systems. He explains the nature of the problem and its philosophical bearings. He then discusses the psychology of the parallel postulate, comparing it to its kindred conceptions. Finally he treats of its validity which is not *a priori* necessary, but most convenient. He says:

"The world, as our actual experience reveals it, is certainly tri-dimensional; judged by the same standard, it is also Euclidean. If, then, only one variety of tri-dimensional space is possible, if non-Euclidean tri-dimensional geometry really demands a fourth dimension, the so-called non-Euclidean spaces are in reality not spaces at all, for they are not self-dependent totalities. It is not, then, a question as to whether non-Euclidean geometries are possible, but a question as to whether non-Euclidean tri-dimensional spaces are possible. It is, of course, possible to construct such geometries by making use of the idea of a fourth dimension, just as we ordinarily build up our plane geometry by frequently referring to figures which are only possible in a third dimension; but this, of course, is very different from establishing the possibility of non-Euclidean tri-dimensional spaces.

"The question, then, simply reduces to this: Are tri-dimensional space-worlds rationally possible whose internal relations considered as totalities are essentially different from each other? And it is answered by showing that the geometries of such spaces can be constructed without appealing to a fourth dimension. This can be done. As in the case of two-dimensional spaces, we have here also all the conditions necessary to render such geometries possible. Indeed, the most interesting and significant feature of non-Euclidean solid geometries lies in the fact that they are just as independent of a fourth dimension as is Euclid itself. There are, to be sure, certain facts

in all these geometries that make us wish sometimes for a fourth dimension and the power of moving into it, but they do not necessarily imply this dimension. The simple principle of congruence fails, for example, if we attempt to apply it directly in proving the equality of two Euclidean pyramids whose corresponding parts are mutually equal but arranged in reverse order. The analogous theorem in plane geometry is proved by obverting one of the triangles in the third dimension. Were there a fourth dimension and had we the power of moving into it, it is conceivable that this might also be done for the pyramids. What would happen is simply this: By obverting one of the pyramids in the fourth dimension and then returning it to its own tri-dimensional world, its relations to the other objects of this world are changed in a way that is wholly impossible so long as we confine it to three dimensions. But the internal relations of the pyramid itself, as in the observed case of the triangle, remain entirely unaltered. The self-identity of the figure is retained. But as we have said, these facts cannot be regarded as implying the logical dependence of Euclid, or of non-Euclid, upon a fourth dimension."

The author sums up his inferences as to the nature of space by recognising that only pure logic is strictly *a priori*, while geometry with its space-conception contains an element of experience the actuality of which can only be proved empirically. We sum up the situation in his own words:

"The only *a priori* manifold at present definable in Kant's sense of *a priori* seems to be a manifold constituted by a totality of logical classes or distinctions of any similar sort. The constitution of such a complete system of logical entities must be implicitly known to any rational being.....

"The connection between this *a priori* logical manifold and the empirical space of our own experience lies in the fact that the space-aspect of experience is the one which most definitely implies and is implied by our power to co-ordinate our activities so that "*a* leads to *b* leads to *c*," etc. It is that aspect which enables us to introduce illative relations among acts and systems of acts of our own (acts actual and acts possible).

"*That* this aspect of experience exists is an empirical fact. *What* correlations of acts it permits and *how* it permits them are also empirical. All the details are empirical. But if it is to permit such a system at all, it has to conform to the general type of the illative relation and its parts viewed as coexistent must be related to each other in accordance with the general type of an illative relation."

THE FOURTH DIMENSION. By *C. Howard Hinton.* London: Swan Sonnenschein & Co. 1904. Pp. vi, 247.

Mr. Howard Hinton, already well known from the publication of his *Scientific Romances*, ably written rambles into the domains of metageometry

and other spheres of the super-sensible world, presents us now with his theory of the fourth dimension that to him is a well-founded fact, to the explanation and evidence of which he has dedicated the whole of this small volume. His procedure may be briefly characterised as forming a systematic conception of four-dimensional space, and then pointing out how a three-dimensional system ought to act if it were a part of a higher or four-dimensional one. Mr. Hinton shows that in investigating the real universe when descending into the finer subdivisions, we come to forms of matter possessing properties different from those of larger masses; and analogous conditions prevail when we take into consideration cosmic relations such as the parallaxes of stars, where the combined angles of triangles cease to measure exactly 180 degrees. Unfortunately the argument is not conclusive in the opinion of those who are not willing to be carried away by mysticism. But even those antagonistic to a belief in the objective actuality of metageometry will find Mr. Hinton's presentation of the subject refreshing and ingenious. How much room a romance of science can find in the mysterious realm of the fourth dimension!

TUTONISH. A Teutonic International Language. By *Elias Molee*, Ph. B. Published by the author. Tacoma, Wash. 1904. Pp. 96. Price, $0.40.

Among the enthusiasts who propose the creation of a new language, Elias Molee of Tacoma, Wash., takes an intermediate course by offering not a universal language, but a speech that should be acceptable to the Germanic race. Living in a community which is mostly made up of Teutonic people, he tried to establish a tongue that could serve as a means of communication between the English, the Germans, the Swedes, the Norwegians, the Danes, the Dutch, and the Icelanders. He calls this new language "Tutonish" and trusts that it will prove superior to the English. It is constructed after the analogy, of German and English and retains much of the grammar common to all Teutonic languages. As an instance may serve the Lord's Prayer which in Tutonish reads as follows:

"vio fadr hu bi in hevn; holirn (hallowed) bi dauo (thy) nam; dauo reik (kingdom) kom; dauo vil bi dun an erd, as it bi in hevn; giv vi dis dag vio dagli bred, and fergiv vi vio shuld (debt), as vi fergiv vio shulders (debtors), and lied vi not into fersieku (temptation), but befrie vi from ievl, fyr dauo bi du reik, du makt (power) and du herlinu (glory) fyr ever—amen. (from mataeus 6, 9-13.)"

Matthew ii. in Tutonish begins as follows:

"nau ven jesus bin birtn in bethlehem ov judea in di dags ov herod, do king, sie, dar komen veis mans from du ost tu jerusalem. sagend, ver bi hi hu bi birtn king ov di judars? fyr vi hav sien hio star in du ost, and hav komen tu anbied hi."

We doubt very much whether his proposition will ever be introduced anywhere in the United States, let alone in any European country. Those who know both English and German will acquire Tutonish easily, but they will probably prefer the use of English.

M. Couturat who has distinguished himself in behalf of the establishment of an international auxiliary language, discusses, in a recent letter addressed to the inventor of Tutonish, the proposals of M. Elias Molee from his standpoint as a believer in Esperanto.

M. Couturat considers that the project of Mr. Molee does not fall within the scope of his Commission and feels consequently that he cannot take it into account in the final edition of his *History of the Universal Language*. In fact, M. Couturat wishes to see one single language, while Mr. Molee's scheme is intended for Germanic peoples alone. Mr. Molee would doubtless say that the Romance and Slavic nations might in their turn adopt inter-Romance and inter-Slavonic languages. But this would make two or three international languages instead of one, which would very much diminish their utility, to such an extent that no one would wish to adopt them. The objection is already made to the partisans of a single international language that this would be one more language to learn. What then would be said if there were three to be learned?

But Mr. Molee doubtless hopes that the pan-Germanic language would in time supplant the others, or even prevent their ever coming into existence. And Mr. Molee puts forward in support of this hypothesis, arguments of political and patriotic nature which seem calculated to convince his compatriots, but which for this very reason can only arouse invincible opposition in other nations. He forgets that such considerations, if they prevailed in every country, would make any international language impossible. M. Couturat appeals to the agreement and concurrence of all the peoples of civilised Europe, while Mr. Molee, as M. Couturat thinks, appeals, on the contrary, to their feelings of rivalry, if not of hostility, and conceives of a linguistic union only between peoples of the same race. M. Couturat believes that Mr. Molee greatly exaggerates the importance of race-feeling among modern civilised nations, which, he thinks, are quite cosmopolitan in this respect; and that, moreover, unity of race does not necessarily entail unity of language and *vice versa*. Have not the English a language which Max Müller classed among the Romance languages? And furthermore, diversity of race does not prevent community of language: the United States are a good example of this. Neither does it prevent community of civilisation: as instance, the Hungarians and the Finns. On the other hand, community of race does not imply community of interests and consequent sympathy, for the English, the Germans, and the Americans are commercially bitter rivals. And it may be remarked in passing that this rivalry would make the adoption among them

of a single Teutonic language more difficult than that of a neutral tongue such as is advocated by M. Couturat, not to mention the natural and invincible hostility which the former would meet on the part of all non-Germanic nations. All this proves that it is unwise to introduce into the question political and racial considerations which have in fact nothing to do with it and which can only render impossible any solution whatever.

To sum up, Mr. Molee's project tends, in M. Couturat's opinion, to divide nations and make their natural opposition more profound and invincible, while his own tends to unite them and draw them together upon an equal footing, and consequently to develop a feeling of common interest and fraternity. The union which he dreams of is not one of races, whose mutual opposition is, indeed, much less than that of nations; it is a union of all civilised mankind without distinction of race or religion, of weakness or strength.

LECTURES ON NEUROLOGY AND NEURIATRY, PSYCHOLOGY AND PSYCHIATRY. After the Methods of the Class-Room, to the Author's Students, and Designed also for General Practitioners of Medicine and Surgery. By *C. H. Hughes, M. D.* Edited by Prof. *Marc Ray Hughes, M. D.*, Barnes Medical College, St. Louis. St. Louis: Hughes & Co., 1902. Pp. 417. Price, $3.00.

This book on Neurology allows us an insight into the work of Prof. C. H. Hughes, President of the Faculty of Neurology and Psychiatry of Barnes Medical College, former Major and Surgeon-in-Chief of Schofield and of McDowell's College Military Hospitals, also Superintendent of the Missouri State Insane Hospital.

Being overworked in his profession, Dr. Hughes has found no time to edit the book himself, but left the work to his son and assistant, Prof. Marc Ray Hughes of the Barnes Medical College. The contents, beginning with Chapter I on page 12, form a connected course of lectures on neurology and kindred subjects: I, Definitions of Terms; II, Neurones and Nerve Cells, their Composition and Characteristics; III, Neurones and Nerve Centers, Neurone Theories, Association Neurones, etc.; IV, Efferent Prolongations, Histological Composition of Nerve Centers, etc.; V, Polar and Apolar, Bi-Polar and Multi-Polar Neurones; VI, Neurones Grouped into Layers and Brain Cortex; VII, Head Heat in Brain Disease; VIII, Temperature Sense, etc.; IX and X, Extra-Neural and Adneural Nervous Disease; XI, XII, and XIII, Instruments and Procedures of Precision in Diagnosis and Practice; XIV, XV, XVI, and XVII, Ascending and Descending Degeneration, Waller's Law and Its Diagnostic Significance, the Reaction of Degeneration and How to Discover It; XVIII, the Evolution of Neuraxis; XIX, and XX, the Evolution of the Brain and Spinal Cord; XXI, Electricity and Electrical

Appliances; XXIII, the Dura and the Sinuses; XXIV, Cerebral Embolism, Hemorrhages and Thrombosis; XXV and XXVI, the Spinal Cord and its Morbid States; XXVII, Sensory-Motor System; XXVIII, Cerebro-Spinal Axis; XXIX, the Neuraxis Diagnostically Viewed; XXX, Outline of Cerebral and Spinal Nerves and Their Relation to Nervous Diseases; XXXI, Virile Reflex and Its Symptomatic Value in Practice; XXXII, Aphasia Defined and Recorded; XXXIII and XXXIV, the Medico-Legal Aspect Illustrated in the Case of William T. Bevin; XXXV, Neural and Psycho-Neural Aspects of Surgical Practice; XXXVI, Nutrition and Conservation of Neurones.

The book is illustrated with the same diagrams which are used in lecture rooms, and the style is rather that of the speaker in the amphitheater than the author confined in his study. We have obviously to deal with a man who is at home in his specialty but who cares little for literary finish or the external appearance of his book. The typography is imperfect, and the proof-reader did not attend to his work properly. Letters are broken off and Greek words are repeatedly misspelled. We notice for instance "struments" for "instruments" (page 117) and "thenos" for "sthenos" (strength) (pages 13-14). The man who made the makeup began both the Introduction and the first chapter on the left-hand page of the book.

The book will be useful to the students of Professor Hughes and other neurologists who have acquired sufficient knowledge to overlook the shortcomings of the book which are mostly of an external nature. It would be highly desirable that the book should be republished by some medical publishing house which could properly attend to its makeup.

EMPIRICAL ESSAYS. By the Author of *Unthinkables*. Edinburgh: George A. Morton. 1904. Pp. 187.

The anonymous author of this book apparently belongs to theosophical circles that shake off the crudities of its common beliefs and try to work out a higher world-conception in the direction of the New Thought movement. His essays are on four subjects.

The first one is entitled "Rome, Jerusalem and an Ideal," and in it he comes to the conclusion that we need no capital city of our faith; that the only metropolis required for a religion which believes in the fatherhood of God, the words of Jesus, an unworldly life, the service of God, etc., would be the "City of Mansoul."

The second article on "The Ten Commandments" is characterised by the following conclusion:

"It stands to reason that a Code given thousands of years ago to a barbarous nation, a Code which condemns image-worship, but has no word of reprobation for drunkenness, lying, or impurity as such, is inadequade

and unsuitable to the moral requirements of a civilised English community at the present day. And its place should be taken by the Eight Beatitudes, supplemented by the Two Commandments which received the sanction of Christ, and the Golden Rule. All the rest, as Hillel said, is but commentary."

The third article, entitled "Karma and Reincarnation," insists on the fact that early Christianity must have accepted the doctrine of reincarnation, for Christ declares that Elijah had appeared in John the Baptist, and the gnostic book *Pistis Sophia* shows that this was the current belief among the early Christians. The fourth essay on the "Higher Agnosticism" tries to supplant the common negativism among liberal circles by a better, truer, and more thoughtful view.

As to theosophy, to which our author devotes considerable attention in the third essay, he sums up his views in the question, "What, then, shall our attitude be towards theosophy as a whole?" and its answer:

"Beyond all doubt, ninety-nine intelligent persons out of a hundred would be inclined to condemn the entire system offhand, one part of it having been seen to be so palpably at variance with the laws of evidence.....But, let us in fairness ask ourselves, is it necessary to reject every theory of the system called Theosophy because of a few foolish statements made in connection with one particular aspect of it? In all seriousness, I do not think it is. We do not treat other systems with such rigor, be they philosophical or religious. No one thinks it incumbent on him to repudiate Christianity as a tissue of delusion and imposture because many of the doctrines put forward in its name are an outrage upon common sense."

THE PHILOSOPHY OF HOBBES, IN EXTRACTS AND NOTES COLLATED FROM HIS WRITINGS. Selected and arranged by *Frederick J. S. Woodbridge.* Pp. xxxvi, 391. Minneapolis: The H. W. Meson Co., 1903.

This volume of extracts from the writings of Hobbes is to be welcomed as an incentive to the direct study of a master both of thought and of style. It includes Chapters 1-6 of the "Elements of Philosophy Concerning Body" and Chapters 1-18, 31, and 43 of the "Leviathan"; and it adds to these, as supplements or as footnotes, most of chapter 25 ("Of Sense and Animal Motion") of "Concerning Body"; Chapter 2 of "Human Nature," Chapters 1-3 of "Philosophical Rudiments Concerning Government and Society"; and a series of extracts formulating Hobbes's doctrine of causation from Chapters 9, 10, and 26 of "Concerning Body"; besides many shorter extracts mainly from the works already named.

The re-publication of the first part of "Concerning Body" is of real significance, for these chapters constitute a vigorous contribution to the doctrine of scientific and logical method, and they are not otherwise accessible except in the many-volumed Molesworth edition of Hobbes. The re-

maining selections offer an admirable outline of the ethical and political philosophy of Hobbes, as this is based on his psychology. Such an outline well represents the teaching by which Hobbes is best known. Yet the writer of this notice questions the wisdom of precisely these selections from the works of Hobbes. Most of the chapters from "Leviathan," which make up the greater part of the book, are accessible not only in inexpensive editions of the "Leviathan" itself, but also in Sneath's Selections from the ethics of Hobbes. Furthermore, the book hardly makes good the promise of the preface, "to present practically all that Hobbes has contributed to the main questions of philosophy and psychology." So far as psychology is concerned, this introductory statement is indeed justified. But the book does not include, except by incidental statement, the characterisic contribution of Hobbes to metaphysics: his teaching that every reality—God and human spirit no less than physical phenomenon—is through and through material. The materialism of Hobbes was, it is true, so bitterly opposed both by his contemporaries and by his immediate successors, that it was never seriously studied and so failed of exerting due influence on the course of philosophical thought. But this constitutes the greater reason for presenting in systematic form Hobbes's metaphysical teaching about the nature and the manifestations of body. This would be accomplished by a volume including the greater portion of Part II. of the "Elements of Philosophy Concerning Body"; and such a book is unquestionably needed by students of the history of philosophy.

The present volume is heartily to be commended for its lack of the usual critical apparatus. Dr. Woodbridge reprints Aubrey's quaint "Life of Mr. Thomas Hobbes of Malmesburie," but he omits the ordinary "critical introduction" for the sound reason that, if read first it will "make an immediate and uncolored impression by the author impossible." In place of introduction and notes, Dr. Woodbridge offers, as has been indicated, an admirable selection of parallel passages from the different works of Hobbes himself, explaining and amplifying one text by another in a scholarly and illuminating fashion.

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FROM EPICURUS TO CHRIST. A Study in the Principles of Personality. By *William De Witt Hyde*, President of Bowdoin College. New York: The Macmillan Company. London: Macmillan & Co., Ltd. 1904. Pp. viii, 185. Price, $1.50.

The Author, William De Witt Hyde, has given much thought to the philosophical problem, and he treats it from the standpoint of modern Protestant Christianity. To him personality is the secret of human life. Still there are some of the higher elements of personality, represented in philosophical principles which rise above the threshold of consciousness and are

reducible to scientific analysis. Of these principles the author selects five: "The Epicurean pursuit of pleasure, genial but ungenerous; the Stoic law of self-control, strenuous but forbidding; the Platonic plan of subordination, sublime but ascetic; the Aristotelian sense of proportion, practical but uninspiring; and the Christian Spirit of love, broadest and deepest of them all."

The author's main aim is to prove that though all of them possess a grain of truth, the four first are insufficient and find their fulfilment only in the fifth, in the Christian spirit of love.

Our author's plan is to proceed by quotations and then add his own explanations. The best portions of the book are Chapters I and II, in which he does justice to the Epicurean and Stoic principles, analysing them and subjecting them to a fair criticism. Parts III and IV show less mastery of the subject, for there are some passages in Plato's writings which ought to have been quoted, and thus the nobility of the Platonic conception and also its great affinity to Christianity does not become sufficiently apparent. The fifth part is not so much an explanation of the Christian spirit based upon quotations of New Testament sayings, but may be characterised as a sermon in which the crown of perfection is offered to Christianity. The author's Christianity, however, is neither the Christianity of the primitive Church, nor of the Middle Ages, nor even the Protestantism of the Reformers, but the modernised Christianity which is imbued with the spirit of syncretism, a Christianity that would be rejected by the Christians of by-gone ages. The author concludes his work with the following sentences:

"The omission of any truth for which the other ancient systems stood mutilates and impoverishes the Christian view of life. Ascetic Puritanism, for instance, is Christianity minus the truth taught by Epicurus. Sentimental liberalism is Christianity without the Stoic note. Dogmatic orthodoxy is Christianity sadly in need of Plato's search-light of sincerity. Sacerdotal ecclesiasticism is Christianity that has lost the Aristotelian disinterestedness of devotion to intellectual and social ends higher and wider than its own institutional aggrandisement.

"The time is ripe for a Christianity which shall have room for all the innocent joys of sense and flesh, of mind and heart, which Epicurus taught us to prize aright; yet shall have the Stoic strength to make whatever sacrifice of them the universal good requires; which shall purge the heart of pride and pretence by questionings of motive as searching as those of Plato; and at the same time shall hold life to as strict accountability for practical usefulness and social progress as Aristotle's doctrines of the end and the mean require. It is by some such world-wide, historical approach, and the inclusion of whatever elements of truth and worth other systems have separately emphasised, that we shall reach a Christianity that is really catholic."

THE STRUCTURE OF THE TEXT OF THE BOOK OF HOSEA. By *William Rainey Harper.* Chicago: University of Chicago Press. 1905. Pp. 51. Price, $1.00.

We have scarcely finished reviewing Dr. Harper's *Religion and the Higher Life,* when a new publication of his comes to our desk. In the meantime the strenuous President of the University of Chicago has been affected by a serious disease which has brought him to the verge of the grave, and we could not but feel the deepest regret and sorrow, if his useful career should come to a premature end. He is at present taking a much needed rest, while his friends hope for the best.

The publication before us is the revised Hebrew text and a new translation of the book of Hosea. It is in a handy form for any one who wants to see at a glance the meaning of a verse side by side with the original, and especially whether it is part of the prophet's own writing, or a later addition or a gloss. For further explanations as to the reasons of these discriminations the learned author refers us to his essay on "Amos and Hosea," published in the *International Critical Commentary,* 1905. The translation follows closely the Hebrew edition, and so Dr. Harper says that it is "sometimes more Hebraic than English." For the purpose which this version serves, it is certainly most appropriate and will unquestionably be appreciated by Hebrew scholars. P. C.

DESCARTES, DIRECTEUR SPIRITUEL. Correspondence avec la Princesse Palatine et la Reine Christine de Suède. Portraits, dessins et autographes. By *Victor de Swarte.* Préface de *M. Emile Boutroux* de l'Institut. Paris: Félix Alcan, éditeur. 1904.

Two royal ladies of good education played an important part in the life of Descartes. In the year 1862 Count Foucher de Careil published an édition de luxe, under the title *Descartes et la Princesse Palatine, où de l'influence du cartésianisme sur les femmes au dix-septième siècle.* The correspondence of Elisabeth was discovered in 1879 at Arnheim and appeared under the title *Descartes, la Princesse Palatine et la Reine Christine.* The present author has utilised these works and has rummaged the libraries and archives of France and Germany to fill out all their gaps, and with the assistance of Messrs. Boutroux and Darboux, he publishes the present collection of the literary correspondence of these two princesses with the great philosopher. The book affords a real insight into the influence of two noble women upon a great man and is as such a contribution not only to the history of philosophy but as it were of the civilisatory influences which are at work in shaping our great men. Descartes's correspondence acquires an additional interest through the dreadful fate of Elizabeth, the wife of the Prince-Elector of Palatine, who was elected king of Bohemia and lost crown and throne in

the battle of the White Mountain near Prague. It was the first stroke of the Catholic powers in Germany to reassert themselves and set a limit to the expanse of the Reformation which ushered in the Thirty Years War so disastrous to Germany. The fate of Christine was happier. She was certainly the equal of Elizabeth in intellectual accomplishments. The book is well written, contains good portraits of Descartes, Elizabeth, and Christine, and also a facsimile autograph of Elizabeth, and a reproduction of an old engraving of the city of Herford.

NOTES SUR L'HISTOIRE GÉNÉRALE DES SCIENCES. By *Louis Favre,* Directeur de la "Bibliothèque des Méthodes dans les Sciences expérimentales." Paris: Librairie C. Reinwald. Schleicher Frères & Cie., Editeurs. 1904.

This little book which bears the modest title *Notes on the General History of the Sciences* is a useful manual which will familiarise students with the aim, the general plan, and methods of the sciences. The several chapters of it treat the following subjects: What is and what is not, doubt and belief, construction of materials and facts, analysis and synthesis, encyclopædic knowledge, the unity of nature and the unity of science, imagination and science, anthropocentrism and anthropomorphism, method, revolutions of method, the true and the useful, medicine and agriculture, impossibilities, paradoxes, progress, the domain of science, contradictions and reconciliations, conditions of scientific progress, useful errors, classical errors, exaggerations, nothing new under the sun, science is social work. In conclusion, our author discusses how to build up and how to teach, and what ought to be accomplished.

HAUPTPROBLEME DER ETHIK. Sieben Vorträge von *Prof. Paul Hensel.* Leipsic: B. G. Teubner. 1903.

Dr. Paul Hensel, a professor of ethics at Erlangen, had been invited to lecture on the main problems of ethics at Mannheim, and having offered in concise outline to his public the main problems of ethics, he here publishes them, making them accessible to a larger public. He sketches and criticises: (1) utilitarianism; (2) evolutionism; and (3) the ethics of conviction, which represents his own views. He declares that in order to perform a truly moral act one must presuppose an unfailing norm of judgment which can be found only in a dutiful conviction. This, then, is the basis, and the only basis, of true morality, and here our author finds himself in close touch with Kant, but endeavors to go beyond Kant in giving the abstract notion of Kant's categorical imperative a definite content, and thus the purely formal *ought* becomes an *ought* of a definite conscience, based upon a narrower or larger experience, or a more or less correct judgment. He who looks upon man

only as an object of science, he who can judge of him under no other view point than the law of cause and effect, is unable to understand that man is a moral being. We must first come into possession of a system of valuation which will help us to judge of reality and to determine man's mode of action. From the standpoint of moral valuation man appears to himself as the product of the entire past. Thousands of years, to speak with Carlyle, have contributed to his birth, and other thousands of years wait what he will do in his life for their realisation. When thus conceding the enormous importance of our own life, our ethics will lead up to a religious thought, it teaches us that it is no accident that our life falls exactly in the present time, and that we are here to solve its problems. In order to act morally and to make the claim to be judged as a moral man, we need above all the consciousness of duty and the intention to act accordingly. It is not a theological morality which constitutes ethics, but a moral theology will be the necessary completion of our world conception. Any one who has not this faith in a higher power and who does not place his life's work into its service cannot accomplish his labors with the same moral earnestness as he who possesses such a faith.

INTEROGATIVE THOUGHT AND THE MEANS OF ITS EXPRESSION. By *Edward T. Owen, Ph. D.*, Professor of the French Language and Literature in the University of Wisconsin. Reprinted from the *Transactions of the Wisconsin Academy of Sciences, Arts, and Letters*, Vol. XIV.

This book belongs to the class of logical investigations which attempt to classify our methods of thinking, and Professor Owen has devoted his special attention to the element belief or disbelief which is the missing element in the interrogative. The treatise discusses words as idea symbols, sentences as thought symbols, and enters into the different analyses of thought. The second chapter is devoted to judgments,—the ordinary, the imperative, and the interrogative judgment. The writer leads to a determination of the missing element which is analysed in Chapter III, while Chapter IV treats of the elements, peculiarities, and structure of belief, its operation on the hearer's mind, and kindred topics. Professor Owen has given much thought to this important problem, but it is difficult to say even after a careful perusal how specialists in logic will take to his investigations, and how far his colleagues in this special line of thought will deem his lucubrations significant.